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April 1953

the Magazine of
Appliance and
Metal Products
MANUFACTURING

finish

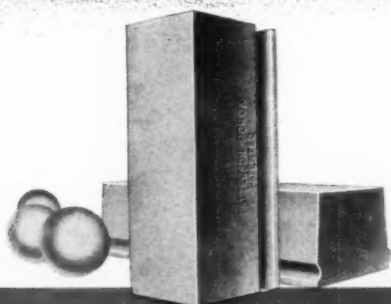
FROM RAW METAL TO FINISHED PRODUCT

Patterson

HIGH PERFORMANCE GRINDING EQUIPMENT

FOR PROFITABLE PROCESSING
AND A BETTER PRODUCT

The favorite of the industry, POROX Balls and Linings are standard where top resistance to abrasion and unusually long life are required at moderate cost. A full range of sizes to select from.



POROX GRINDING BALLS
MILL LININGS

ARLCITE HIGH DENSITY
BALLS
AND LININGS



ARLCITE Grinding Balls are Patterson through and through—developed by the pioneer in high-density grinding balls, with experience over a longer time and in more industries than any other manufacturer. ARLCITE Balls reduce grinding time 25% to 30%—produce more—wear longer—and cost less per unit of production. Specify them!

ARLCITE "B" Linings wear 50% longer than Porox, but are moderately priced.

PEBBLE MILLS



PATTERSON Pebble Mills are the recognized champions in the ceramic field. Available in all sizes to meet your production requirements.

PATTERSON EQUIPMENT for the enamel industry is the result of 50 years' experience in that field. Patterson Mills and Patterson Enamel Storage and Pressure Vessels provide the maximum in long life and satisfactory service.

Richard L. Canwood
President

The Patterson Foundry and Machine Company
East Liverpool, Ohio, U. S. A.

NEW YORK, BOSTON, BALTIMORE, PHILADELPHIA, PITTSBURGH, DETROIT, CINCINNATI,
CHICAGO, ST. LOUIS, HOUSTON, DENVER, LOS ANGELES, SAN FRANCISCO, SEATTLE

The Patterson Foundry and Machine Company, (Canada) Limited
Toronto, Canada
MONTREAL

ADS OUT

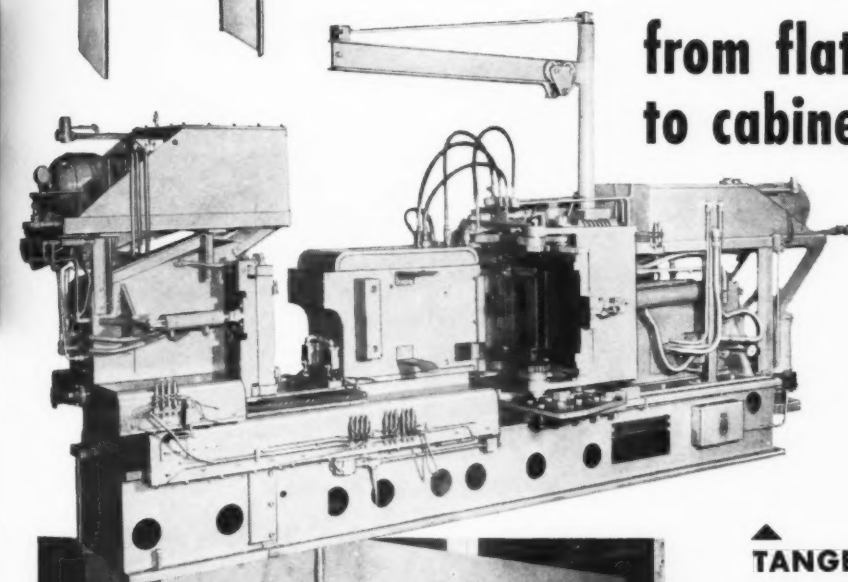
Deepfreeze profits with

DIVISION OF MOTOR PRODUCTS CORP.

**Struthers
Wells**

SHEET METAL FORMING EQUIPMENT

**from flat sheet
to cabinet wrap-around**



TANGENT BENDER

Rapid, precision bending of flanged sheets to form the outer cabinets of Deepfreeze units is provided by the Struthers Wells Tangent Bender, which delivers a smooth, finish-formed product in one operation, and at high production rates.

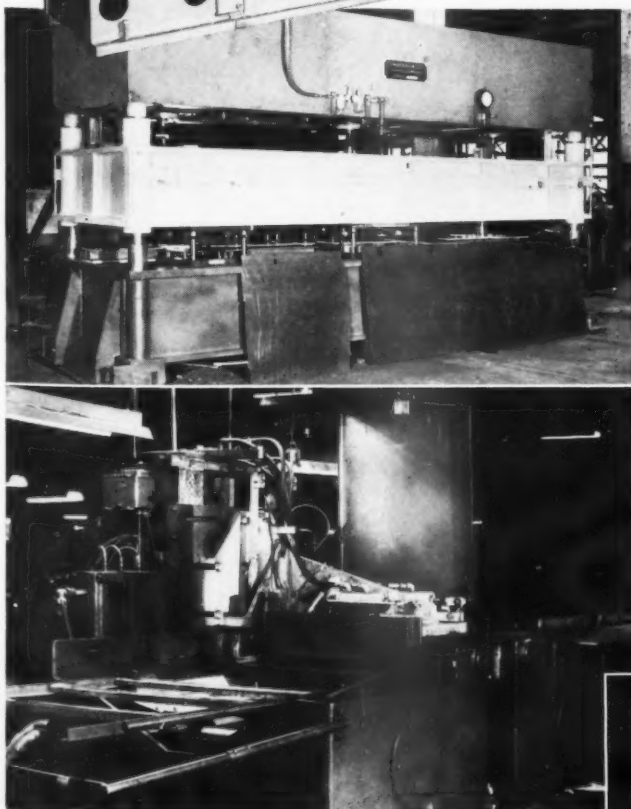
JET POWER HYDRAULIC PRESS

This Struthers Wells 100-ton notching press is adjustable for production of all models of chest-type Deepfreeze cabinet blanks. After notching, part is roll-formed and moved to Tangent Bender.

* * *

The complete line of Struthers Wells sheet metal forming machinery for the appliance industry includes Tangent Benders, Folding Machines, Roller Table Bending Machines, Sheet Stretch Benders, Tumble Die Bending Machines, and Press Brakes. Write for full information on the equipment in which you are interested.

- Struthers Wells Tangent Bender Model 36-DX-3 at work in Deepfreeze plant, showing forming of chest-type wrap-around. 7, 12 and 16 cu. ft. wrap-arounds are formed on one machine.



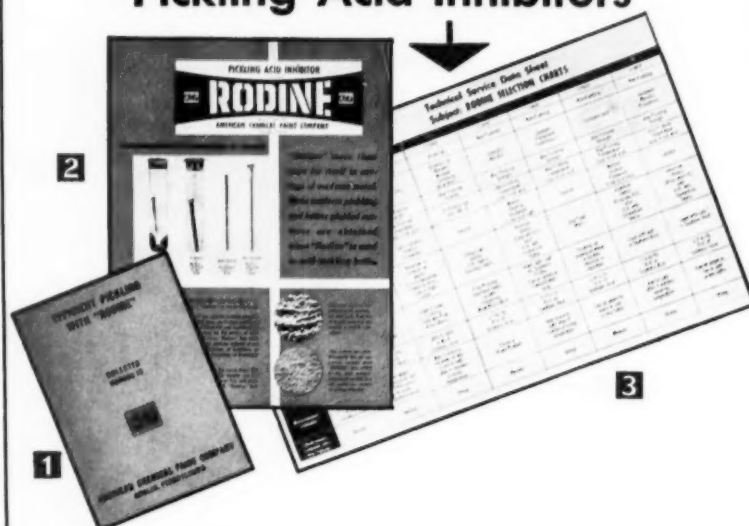
**MACHINERY DIVISION
STRUTHERS WELLS CORPORATION
TITUSVILLE, PA.**

Offices in Principal Cities

New Data Available on ...

RODINE®

Pickling Acid Inhibitors



1 The standard reference work on pickling, "Efficient Pickling With RODINE" — Bulletin Number 13 — is now available in a new, revised edition.

2 This new 4-page general descriptive folder presents essential information on "Rodine" pickling acid inhibitors.

3 The recently revised "RODINE SELECTION CHART" gives characteristics of and uses for typical "Rodines" used with sulfuric and muriatic acids. Technical Service Data Sheet No. 13-1-1-4.

Use coupon below for free copies of the literature described above.

AMERICAN CHEMICAL PAINT COMPANY

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CLIP AND MAIL TODAY!



American Chemical Paint Co.
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Gentlemen:

Please send me FREE:

- ☐ "Efficient Pickling With RODINE" — Bulletin No. 13.
- ☐ 4-page general descriptive folder.
- ☐ "RODINE SELECTION CHART"

Name

Company Name

Address

City State

MEETINGS

ELECTROCHEMICAL SOCIETY

The Electrochemical Society, 103rd annual meeting, Statler Hotel, New York City, April 12-16.

MACHINE TOOL FORUM

Annual Machine Tool Electrification Forum, Buffalo, N. Y., April 14-15.

NATIONAL PACKAGING

EXPOSITION

American Management Association, 22nd National Packaging Exposition and Conference, Navy Pier, Chicago, April 20-23.

AMERICAN CERAMIC SOCIETY

American Ceramic Society, 55th annual meeting, New York City, April 26-30.

CENTRAL ENAMELERS

Central District Enamellers Club, Allerton Hotel, Cleveland, Ohio, May 1.

LPGA CONVENTION

Liquefied Petroleum Gas Association, annual convention and trade show, Chicago, May 3-6.

MATERIALS HANDLING SHOW

National Materials Handling Exposition and concurrent Materials Handling Conference, Convention Hall, Philadelphia, May 18-22.

GAMA ANNUAL MEETING

Gas Appliance Manufacturers Association, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., May 20-22.

COOKING, HEATING

MFRS. MEETING

Institute of Cooking and Heating Appliance Manufacturers, annual meeting and suppliers exhibit, Netherland Plaza Hotel, Cincinnati, June 1-2.

ELECTROPLATERS MEETING

American Electroplaters Society, 40th annual convention, Benjamin Franklin Hotel, Philadelphia, June 15-18.

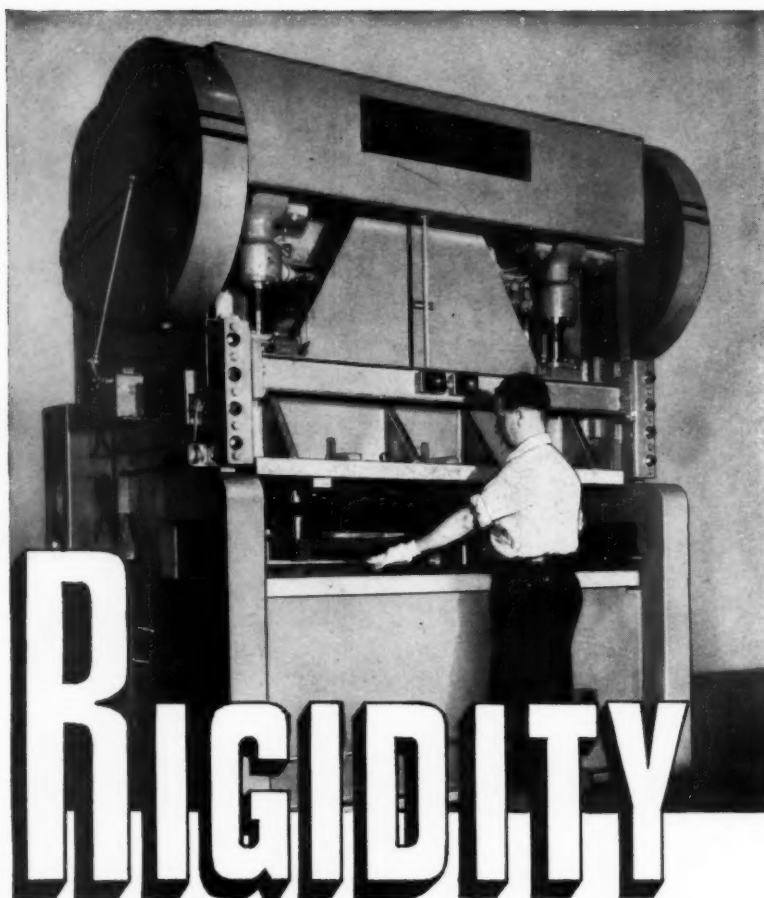
APRIL • 1953 finish

THE finish *spotlight*

ADS OUT _____



This handsome, compact package this young lady is examining is Carrier's new Home Weathermaker — designed to bring complete summer and winter air conditioning to the low-cost mass-market home. The Weathermaker supplies complete home heating as well as cooling, removal of excess humidity, and offers year-round filtered air circulation. It measures a space-saving three by three square feet.



AND WIDE BED AREA MAKE THE **BATH** PRESS TYPE BRAKE IDEAL FOR BLANKING... PIERCING... SHALLOW DRAW



THE RIGIDITY of the Bath Press Type Brake is evidence of its high standard of construction. With speeds of 45 or 60 strokes per minute, it has many outstanding advantages such as Overload Protection, Pneumatic Clutch-Brake, End Feeding, Serial Operation etc.

The one piece welded frame, with closed side housings, makes for perfect die alignment, which means stamping, bending etc. to very close measurements. Slide areas are large, about four times those in ordinary bending presses, adequate for most of the difficult blanking, stamping and punching operations. Ram and bed working areas are flush with the forward housing and easily reached by the operator.

Under a heavy production schedule the efficient and economical operation of the Bath Press Type Brake increases production and offsets losses incurred elsewhere.

For further information and specifications on the Bath Press Type Brakes write for this catalog.

THE CYRIL **BATH** COMPANY
MANUFACTURERS of METAL FORMING MACHINERY
7039 MACHINERY AVE. • CLEVELAND 3, OHIO



a "must" for reading

Gentlemen:

For several years I have been receiving my own personal copy of your good magazine, *finish*. It has almost become a must as one of the magazines that have to be read during the month.

I have accepted the position as manager of our Dayton office, and would like to have the *finish* publication follow me there. Will you please see that this change of address is taken care of?

W. W. Kuenn
Owens-Corning Fiberglas Corp.
Dayton, Ohio

finish has followed you to Dayton, Mr. Kuenn.

greetings from "down under"

Gentlemen:

We were interested to read in the November, 1952, issue of *finish* in the Suggestion Box, about air inflated grinders for polishing stainless steel sinks, and we should be very glad to have any further information that is available on these.

In the third quarter of this year our Works Manager (Mr. S. H. Dunstone) and our Chief Draughtsman (Mr. A. T. Hallowell) will be in the United States, and if they are in your vicinity we will ask them to call on you. My brother Tom is also going abroad this year, and he naturally would call on you if he visits Chicago.

A. Simpson & Son Limited
J. M. Simpson, Director
Adelaide, South Australia

"one of the finest"

Gentlemen:

Your entire issue of February . . . was very well done. Your magazine is one of the finest.

John T. Roberts
Crane Co.
Chicago, Ill.

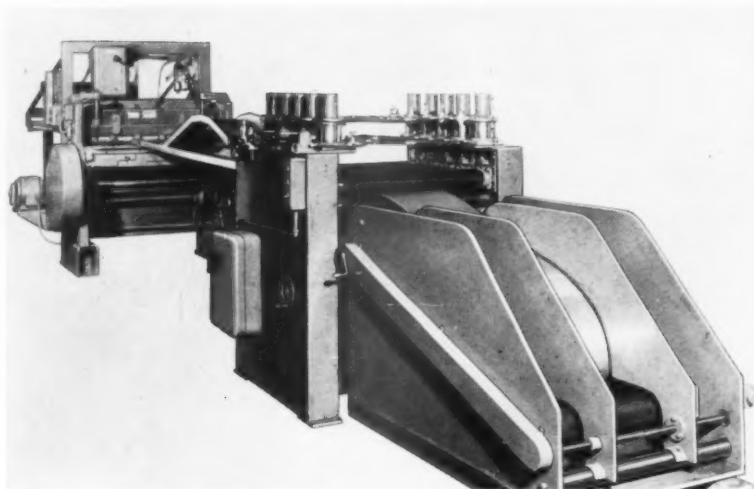
from our western editor

"The head librarian of the Pacific Aeronautical library tells me there is a constant demand for their copies of *finish*."



finish SUGGESTION BOX

Automatic de-coiler-shearer for fabricating steel and aluminum



A NEW machine, which de-coils, levels, shears and stacks automatically, requires only one attendant.

The automatic de-coiler-shearer will handle any flat material such as steel, aluminum, etc. It will work steel coils up to 13 gauge, and will handle widths from 6" to 60", with a plus or minus variation of 1/64". One adjustment is required to change lengths.

Sheared pieces are automatically stacked in orderly fashion, ready for

removal to other operations. Operating speeds are up to 150 fpm, depending upon length to be cut.

Under normal on-the-job operating tests this machine is reported to have established a record of substantial over-all-savings in time and labor costs, in material and material handling costs, and in elimination of delays in cut stock shipment.

Source for further information on this machine may be obtained by writing directly to finish.

GAS RANGE SHIPMENTS START YEAR WITH GAIN OVER 1952

Automatic gas range shipments during January totaled 166,900, a gain of 800 units over the 166,100 mark recorded for January of last year, it was announced by Edward R. Martin, director of marketing and statistics, Gas Appliance Manufacturers Association.

Total gas range shipments for 1952

amounted to 2,193,800 units, and a year-end survey of the industry indicates that the 1953 volume will exceed 2,320,000, stated Martin.

GAMA FURNACE SHIPMENTS UP NINTH MONTH IN A ROW

A substantial increase in January shipments of gas-operated furnaces over shipments in January, 1952, accounted for the ninth consecutive

monthly gain in gas equipment for house heating. Total deliveries amounted to an estimated 35,200 units, a gain of 44.9 per cent over 24,300 units sold a year ago, according to GAMA.

WATER HEATER SHIPMENTS GAIN

Shipments of automatic gas water heaters for the first month of 1953 continued the healthy trend indicated during the last half of 1952, and the estimated unit total for January was 183,100, according to the Gas Appliance Manufacturers Association. The estimated unit total for January was 183,100, a 23.1 per cent gain over 148,700 units shipped in January a year ago.

LAUNDRY EQUIPMENT SALES

AHEAD OF A YEAR AGO

Factory sales of standard-size household washers, automatic tumbler dryers, and ironers in January showed an increase over sales in January a year ago, according to figures announced by the American Home Laundry Manufacturers' Association.

Washer sales totaled 277,309 units, compared to 213,998 a year ago, a gain of 29.6 per cent.

Dryers sold in January aggregated 62,260 units, a gain of 38 per cent over 45,121 units in January, 1952.

January ironer sales were 24,395 units, 56 per cent above 15,636 units sold in January a year ago.

AHLMA reported that final figures for 1952 showed that factory sales of washers totalled 3,101,045 units; dryers, 614,577; and ironers, 202,143.

VACUUM CLEANER SALES UP

Factory sales of standard-size household vacuum cleaners in January showed a 11.1 per cent advance over sales in January last year, according to C. G. Frantz, secretary-treasurer of the Vacuum Cleaner Manufacturers' Association. Sales were 255,886 units, compared to 230,226 in January, 1952.



PLANTS that learned about Century time-proved frits during the past six months have more "dollars in their pockets" today as a result. Customers who have used Century enamels year after year can show a nice fat saving in enamel plant operating costs—that's why they continue to use them year after year.

Sure, they are priced right to start, but there are "in plant" savings that count up fast. Century ground coat enamels give the grip, the durability so important to your product, and they are easy and economical to apply. Century cover coats produce the finishes you can sell with confidence and produce them without extra fuss or special handling in the plant.

Make a note to arrange for a trial of Century

frits before another month rolls by. Then, by the end of this year you will agree with us that Century frits "put dollars in your pockets."



CENTURY VITREOUS ENAMEL COMPANY

• 6641-61 S. Narragansett Ave., Chicago 38, Ill. •

Torture chambers for G-E jets

combustion chambers are precision-built of chrome-nickel alloy and stainless steels to confine jet engine explosions

by *L. A. Pichal* • PROJECT ENGINEER, RYAN AERONAUTICAL CO., SAN DIEGO, CALIF.



Production lines have been streamlined to fabricate thousands of combustion chambers and transition liners for General

Electric J-47 jet engines. Hottest operating parts of these turbojets, the Ryan components are precision-made to withstand extreme temperatures and high-velocity gas flow.

Consisting of inner and outer chambers, the combustion chamber assemblies are the torrid heart of the turbojet power plant. Like the cylinders in a piston-type engine, they contain the raging flames which consume hundreds of gallons of fuel per hour. Unlike cylinders, they are made from thin sheet steel instead of heavy cast metal.

At top speed, the J-47 swallows several tons of air a minute. It is compressed and fed to combustion chambers where the fuel is burned. Only a small portion of the air is consumed in combustion. The tremendous heat of the blast expands the balance of the air and causes it to whip through the transition liners and fight its way between the turbine buckets. The caged gases hurl

the buckets aside, spinning the turbine and compressor at tremendous speeds. Then, the exhaust spurts from the tailpipe at a 20-mile-a-minute clip. The heat output from this furious furnace is equivalent to that of a steam plant needed to heat a 50-story office building with 4,000 rooms.

Precision fabrication

The J-47 inner combustion chambers are made from a tough, heat-re-

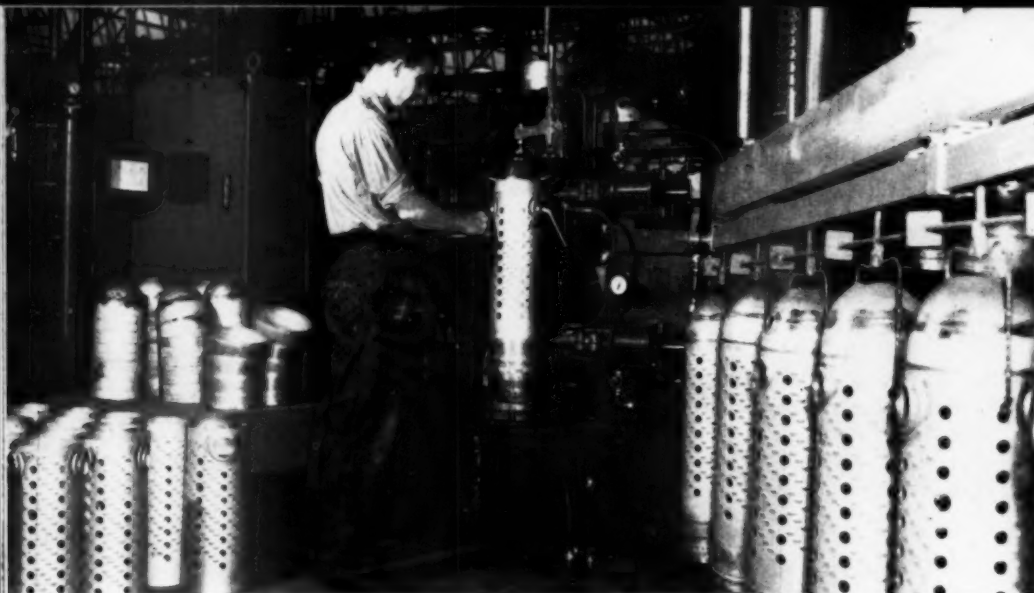
sistant chrome-nickel alloy. The sheets are blanked and pierced in precision dies by huge presses. They are rolled into circular form and welded along their seams with automatic heliarc machines. Powerful punch presses cut out the holes and louvers which permit just the right amount of air to enter and mix with the burning fuel.

The chamber, cap and exit shell are aligned and automatically spot-tacked together in a specially designed welding machine. Seams are closed with

Intricate patterns of holes and louvers is made in each chrome-nickel alloy inner combustion chamber by punch presses which exert up to 105 tons. Design of these openings is important to jet engine performance because proper air mixture is influenced by number, shape and location of aperture.

finish APRIL • 1953





Specially designed for inner combustion chamber fabrication, this new spot welding machine makes four spot welds at a time and also automatically aligns the chamber shell cap and exit shell. 32 spot welds are made to form this assembly, which is seam welded later. Conveyor on right carries units to seam welder.

fast, seam-welding machines; fittings are spot welded on, and the assembly is ready for a series of minute inspections. When it passes this scrutiny, it is boxed and shipped to the General Electric assembly plant at Lockland, Ohio.

Ten thousand "horses"

The function of the inner combustion chamber is to burn as much fuel and air as possible in the briefest time and space. To drive a jet engine compressor requires more than 100 horsepower for each pound of air delivered per second. A pound of air a second provides about 50 pounds of thrust. Therefore, the J-47, which produces about 5200 pounds of thrust, has a turbine which must deliver more than 10,000 horsepower. This mighty force is unleashed with-

in the inner combustion chambers.

The inner combustion chambers are inserted into outer combustion chambers which are hermetically sealed tubes of stainless steel. Ryan builds these structures in similar fashion to the methods used for inner chambers. A water-alcohol mixture is injected into the combustion area to provide boosts in thrust output for limited intervals which increases the mass flow and the exhaust velocity.

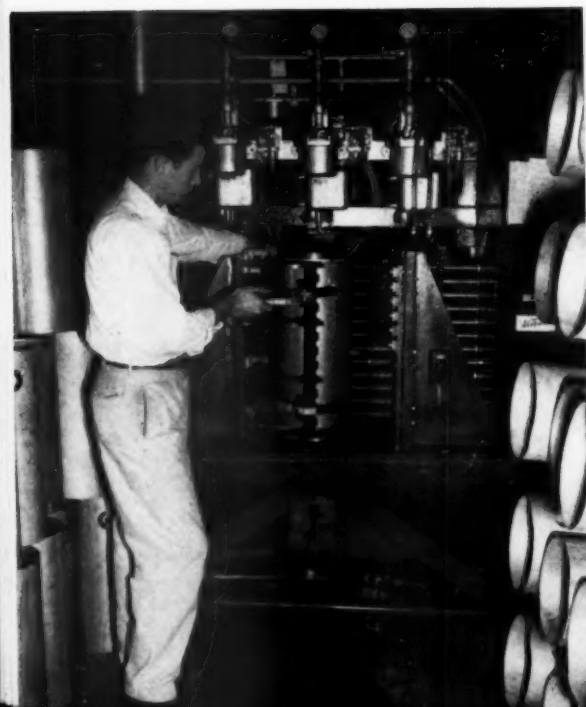
The function of the outer combustion chamber is to direct tremendous quantities of compressed air into the inner chamber, for combustion and expansion, and to act as a cooling shroud for the inner chamber. This cooling effect is attained by a sheet of air which flows between the inner and outer chambers, carrying heat away from the raging fires. The com-

bustion unit is designed to start the burning of the fuel at the front end of the inner chamber and to complete this combustion before the gases reach the rear.

"Hot spots"

If the flame front follows the hot exhaust from the chamber or bursts out through the holes and louvers, a "hot spot" will develop. This phenomenon results in the flames surrounding both surfaces of the inner combustion chamber and prevents the cooling air from coming in contact with the metal. The sudden temperature rise then consumes the metal in this area. It is a testimonial to General Electric designers that huge quantities of fuel are successfully burned in the restricted space allo-

to Page 73 →



Right: Outer combustion chambers are fabricated from stainless steels and seam welded with fast machines.

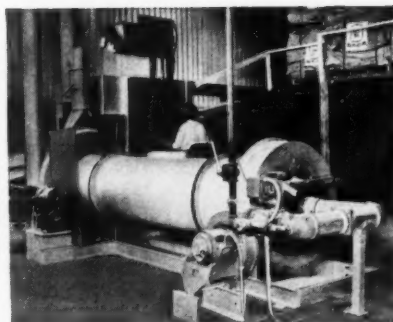
Left: Outer combustion chambers are aligned and spot welded in an ingenious new machine which makes 12 spot welds simultaneously.



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← **WELDING INCONEL** feeder spirals to inner Inconel shell of a perlite expansion furnace. This shell, in which the mineral is pre-heated and then "popped" at temperatures ranging to 2000° F., is suspended only at the ends, and rotates constantly. Use of Inconel minimizes sagging, reduces crust formation, scaling and abrasion, and provides rapid heat transfer. → Furnace in operation, with raw ore being dropped into burner flame. *Illustrations by courtesy of The Perlite Corporation, Lansdowne, Pa.*



Improved High-Temperature Furnace

Boosts Production of the "CINDERELLA MINERAL"

Twelve years ago, it was commercially unknown.

Today, there's a demand for more than 18 million cubic feet a year. And the limit is nowhere in sight.

That's the Cinderella story of perlite, a glassy volcanic mineral found in the Rocky Mountains.

First used in place of sand as a concrete and plaster aggregate, perlite has now proved its value in many other fields. It is used in drilling muds and oil well cements...as a filler in plastics and resins...even as packing material for fragile merchandise.

In theory, the processing of perlite is fairly simple. You crush the mined or quarried ore (which is nearly 75% silica), and then heat it to a high temperature. Entrapped water vaporizes, and the ore pops like corn, expanding to 10 times its original volume.

There's the finished product! And many times, too, the processors of perlite also look at a "finished" furnace. For processing temperatures that sometimes exceed 2000° F. play hob with ceramic linings. Heating and cooling bring on spalling. Even the rough ore particles themselves do plenty of damage.

As production demands soared, a way had to be found to beat these furnace problems. And it was—with Inconel®, the high-temperature alloy so widely used in jet-engine combustion chambers and metal heat-treating equipment.

Long known as one of the most durable high-temperature metals, Inconel resists wear and abrasion. It helps protect product purity. It reduces clinker formation...scaling...buckling...corrosion. In perlite furnaces, Inconel promises a service life up to 5 times that of firebrick.

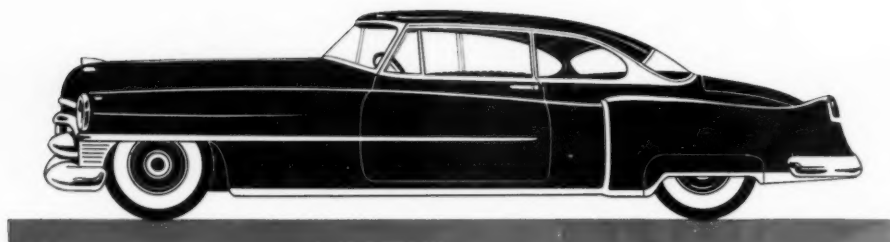
It is advisable to place equipment orders with your supplier well in advance of scheduled use. Distributors of Inco Nickel Alloys can supply the latest information on availability from warehouse and mill.

THE INTERNATIONAL NICKEL COMPANY, INC.

67 Wall Street, New York 5, N. Y.



INCONEL...for long life at high temperatures



One Car is Outstanding

That car is tops because of the meticulous care given to every phase of its manufacture. In design, in choice of materials, and in every last detail of workmanship, perfection is the only acceptable measure. Its value outweighs its cost.

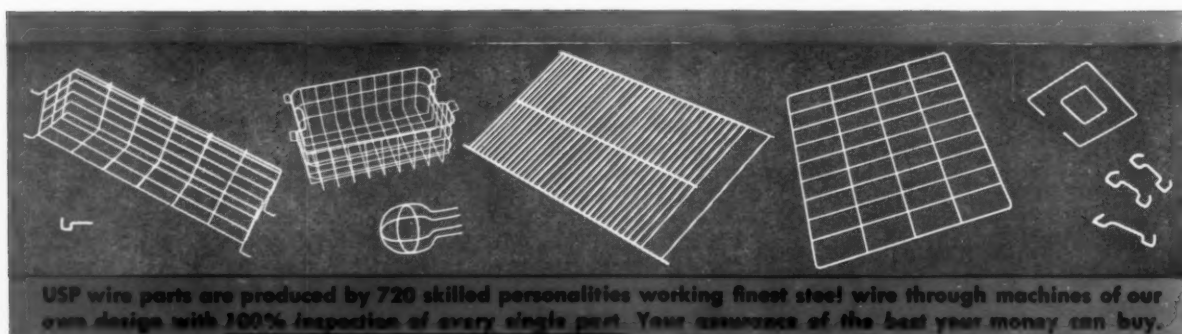
SO IS ONE SOURCE FOR WIRE PARTS!

Union Steel meets your demand for complete satisfaction by similar care for every detail of design and manufacture . . . by the same uncompromising regard for quality. If you want better wire parts for your money, USP engineers can develop them for you. They'll be glad to analyze your particular needs and recommend a solution to your problem. A word from you will start things rolling!



UNION STEEL PRODUCTS COMPANY
Albion, Michigan

1903 • Our Golden Anniversary • 1953



Metal stitching appliance assemblies

metal stitching and its use in the appliance industry is demonstrated as applied by Westinghouse Electric Corporation, at Mansfield, O., plant

ONE of the more recent additions to the list of advanced fabricating equipment to be put in use in

the appliance division of Westinghouse Electric Corp., at Mansfield, Ohio, is the metal stitcher for fasten-

ing together parts with wire staples normally riveted or spot welded.

Suitable for mass fabrication

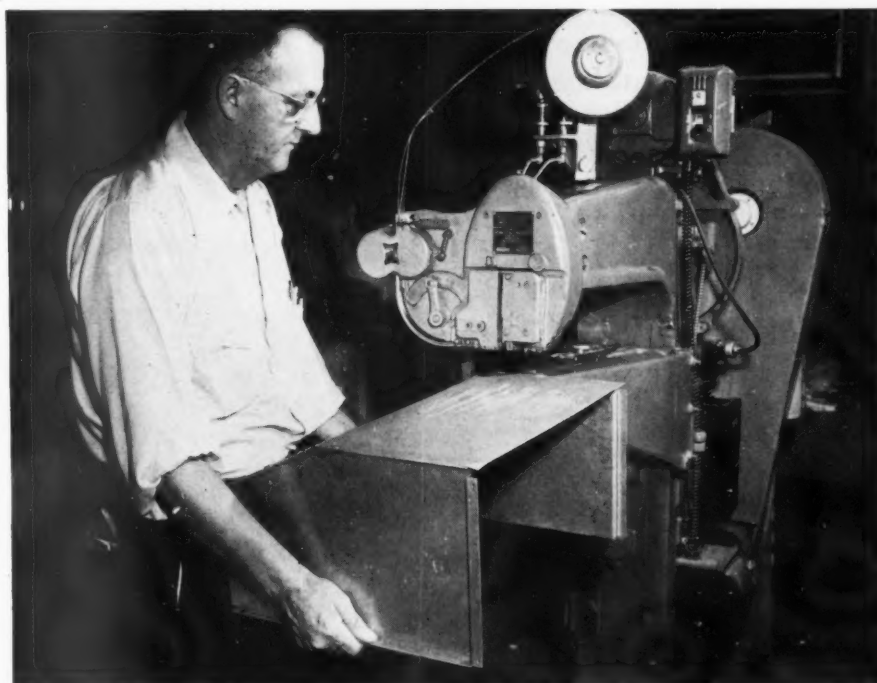
Its application is especially suitable for mass fabrication of aluminum or painted assemblies for appliances, such as drawer bodies, sub-assembly frames, etc. This type of fastening is rapid, economical and sound structurally.

Unit designed for fast operation

The unit is designed for fast operation and will accommodate most parts. The parts are held together by hand or fixture and the stitcher pierces the parts, inserts the wire, cuts it off and clinches the wire in one operation. Minimum maintenance costs and tooling are important factors realized in its use.



These photos show the use of metal stitching equipment in the Westinghouse major appliance division plant in Mansfield, Ohio. Use of this type of fastening has been found to be sound structurally.



NOW... PEMCO FLAKE FRIT

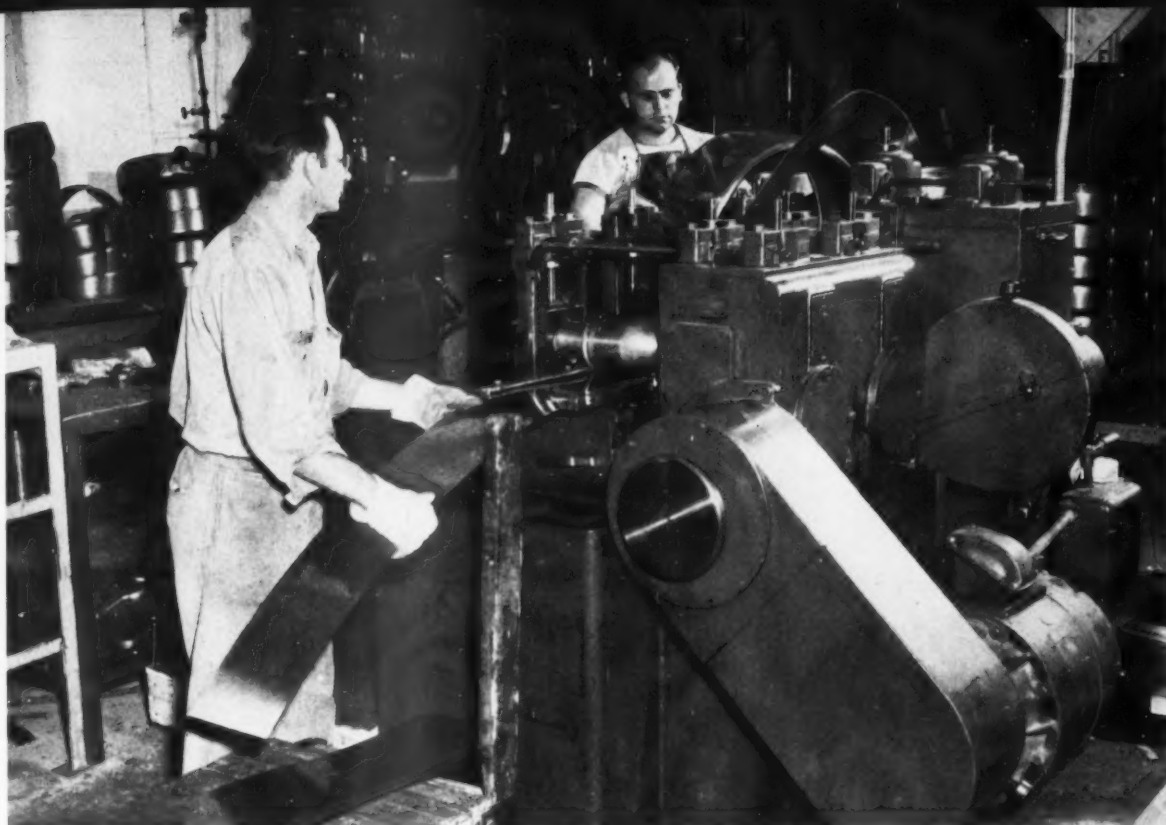
Our watchword is "satisfaction"—your satisfaction. But Pemco is never satisfied . . . Pemco research is constantly on the job—searching, proving, improving. Despite the cost in time and dollars, Pemco again offers a better material for improved production.

Pemco Flake Frit is another step toward practical resistance to hairlining . . . extra color stability . . . and more uniform set characteristics.

You can turn to Pemco frits with confidence . . .

PEMCO CORPORATION 5601 EASTERN AVE., BALTIMORE 24, MD.





Feeding steel blanks into machine which roll-forms washing machine base rings of type shown stacked at the left.

Photo story of Whirlpool production at Clyde Porcelain Steel division

**production equipment moved 200 miles with loss of only two weeks production time;
\$1,250,000 spent in plant to build 1000 units per nine-hour shift**

LATE last summer, Whirlpool Corporation transferred its wringer-type washer and ironer assembly operations from the main plant in St. Joseph, Michigan, to the newly-acquired Clyde Porcelain Steel Division, in Clyde, Ohio. The move was made to permit expanded production of automatic washers, as well as for new dryers, at the main plant.

Altogether, nearly 200 semi-trailers filled with parts and machinery made the trip of more than two hundred miles. The clock-like precision which set the tempo of the move was the result of many hours of planning.

It worked so smoothly that the beginning of the lines were ready for production when the last few loads of equipment arrived in Clyde.

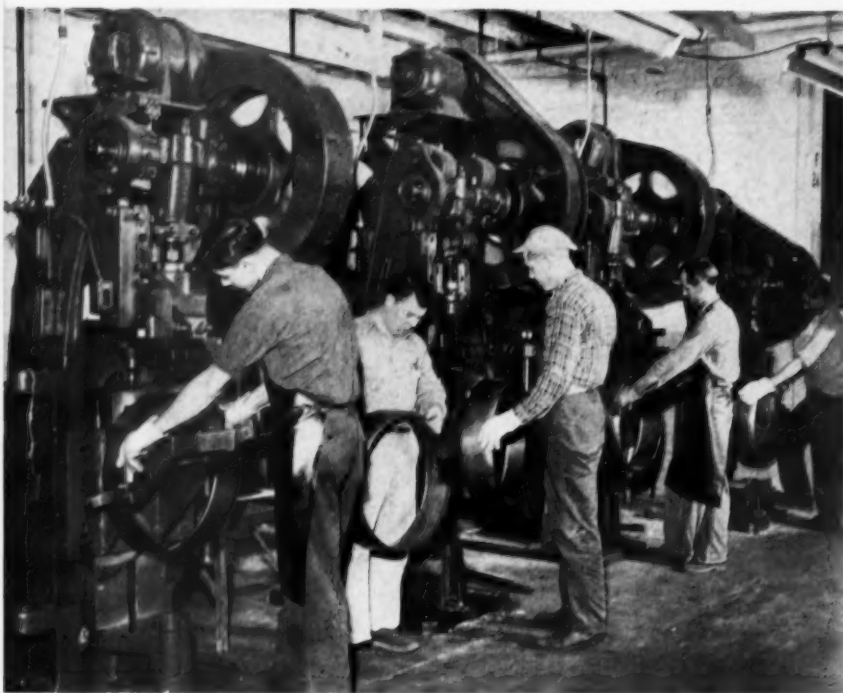
Two weeks from the time the last conventional washer was made in St. Joseph, the new lines at Clyde were in production. Within two months, CPS was making a thousand machines in a nine-hour shift.

In the first five months at Clyde, the company spent more than \$1,250,000 in preparing the plant for the new production. Employment at Clyde in the same period jumped from 650 to 1500, and has levelled

out at about 1800 steady employees.

Before the merger, Clyde Porcelain Steel Corp. was principally concerned with contract manufacturing parts for refrigerators, home laundry equipment, kitchen sinks, lighting fixtures, and other appliances. Their only finished product was porcelain enameled steel tile.

In addition to the new home laundry equipment production for Whirlpool, the Clyde plant still does some contract manufacturing of parts for kitchen appliances and lighting fixtures, as well as defense work in the form of heavy steel doors for tanks.



Punch press operations—performed on washing machine tub base rings include the piercing of openings for gear case, pump, shifter, etc.



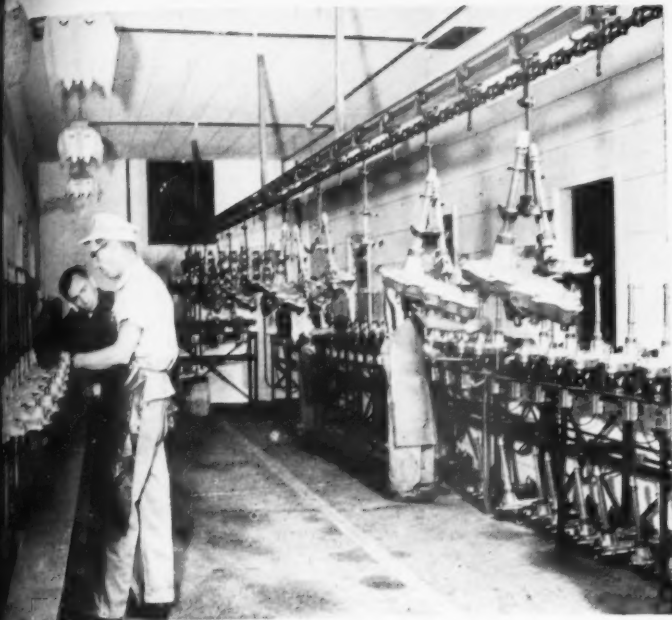
Press department—includes a row of large presses which can exert pressures up to 850 tons.



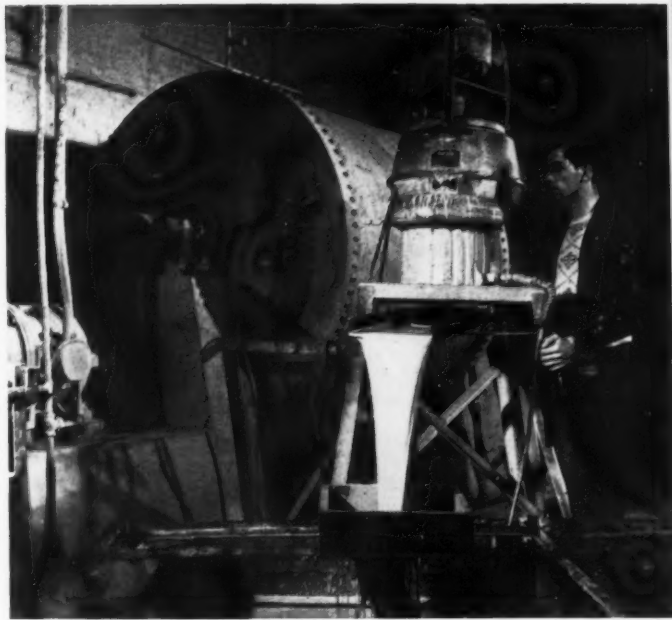
Projection welding—legs to ring. Following this operation, units are hung on an overhead conveyor feeding phosphatizing system which prepares this assembly for painting.



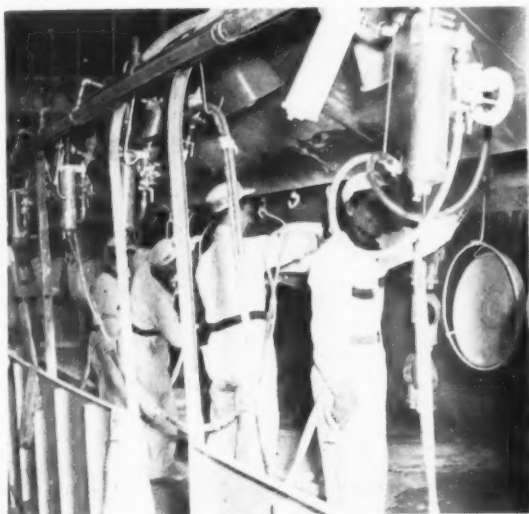
Machine shop—includes equipment for drilling, milling, reaming, cutting and shaping gear teeth, etc. Parts machined in this department are used in the gear case assembly.



Gear case inspection — showing the "run-in" operation on the wringer-washer gear case assembly. One inspector is shown testing for gear noises.



Mill room — showing unloading of enamel slip. Milled enamel is pumped through a centrifugal sieve and a magnetic separator.



Paint spray booth — where finish coat of synthetic enamel is applied to tub shells, covers, legs and base assemblies.



Enameling department — showing priming tanks for automatic washers hung on chain entering continuous furnace for firing of the porcelain enameled coating.



Ironer assembly line—Left: Showing ironer shoe being made up and tested as a sub-assembly on the left, and at the right the main assembly line where ironer shoe and ironer roll are assembled to the ironer.

Below: At this station an ironer roll is being made up as a sub-assembly on the lower right, and at the left is shown the main assembly line where covers are attached to ironer units.



NOTE

Packaging and materials handling operations are shown in the Safe Transit section (Page ST-3).

Washer assembly line — where porcelain enameled tubs are secured to the tub base and leg assembly.



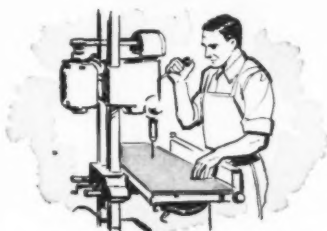
NOW YOU CAN

FABRICATE ENAMELED ALUMINUM

DU PONT VITREOUS ENAMEL FOR ALUMINUM

PERMITS ELIMINATION OF COSTLY PREFABRICATION

REMARKABLE NEW FINISH
WITHSTANDS:



Drilling and punching



Sawing and shearing



Welding on reverse side

DU PONT
VITREOUS ENAMEL
FOR ALUMINUM



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

Aluminum sheet, finished with Du Pont vitreous enamel, can be cut to size on the job—without damaging the coating! Costly prefabrication is eliminated. Rigidity is increased as much as 60% by a single standard coating of vitreous enamel . . . permitting the use of lighter gauge metal in many more applications.

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Investigate Du Pont vitreous enamel for aluminum. It's a practical way to make your product look better, wear longer and sell faster. Send the coupon below for details. We'll be glad to supply you with technical literature and give you specific recommendations on how the enameling process can best be adapted to your individual needs. And, at your request, we can also put you in touch with enamellers who are completely familiar with the vitreous enamel process.

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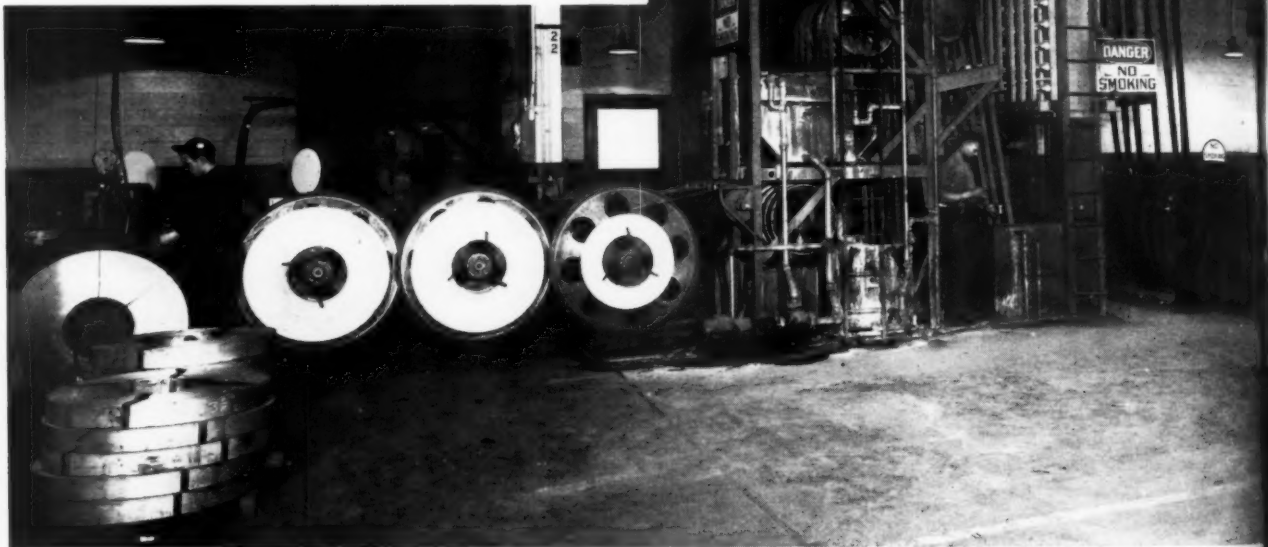
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Coating steel strip automatically prior to fabrication



describing special painting machines designed to coat steel strip continuously and automatically prior to fabrication operations

WHEN a company division manufacturing rolling steel doors, steel deck plates, and other items of strip steel decided to paint the stock prior to roll-forming, the company designed and built two special painting machines to coat the steel strip continuously and automatically. Although the system includes several cleaning and preparatory treatments, dip coating with a synthetic enamel, and a bake in a 50 foot oven to set

the enamel, it was designed to take up only about 20 feet by 10 feet of floor space.

Roll-forming follows painting

It was decided to paint the steel in the flat, before roll-forming, so that all surfaces would be adequately protected even when formed into deep, narrow grooves or nearly closed curved forms. Prepainting was possible because all the fabricating

would consist of roll forming, shearing, punching, and riveting. The decision to prepaint also made possible the use of simplified equipment to coat the steel strip in a continuous length.

The steel strip used for fabricating the interlocking doors, slats and deck plates is purchased in coils in the widths used, from about 5 in. to about 18 in. The coils are set up at the feed end of the coating machine,

from four to six strips wide, according to the width of the strip. Each strip moves up and over an idler pulley, then down into the first bath of the system. Here an alkaline cleaning solution cleans and degreases the strip. The tank is narrow and deep, and the strip travels downward into it, reverses itself around another idler pulley near the bottom of the tank, and passes over yet another pulley to descend into the second bath of the system. The second bath is a phosphating treatment that coats the steel to improve the paint bond with the enamel. A clear water rinse, and a chromic acid dip follow. The strip then passes after air dry, into the enamel dip tank for the paint coat.

In all of these tanks the movement of the steel strip is mostly vertical, so that the steel is thoroughly treated without much travel in a horizontal direction. One of the machines further compresses the system by placing the tanks in a staggered position one above the other. The paint dip tank, containing the rust inhibiting synthetic enamel, uses the same system

Editor's Note:

Both of the finishing systems shown in the accompanying photos are installed in the plant of The R. C. Mahon Company, Detroit. One is in the Steel Deck Division, the other in the Rolling Steel Door Division.

They are both complete finishing systems, and were especially designed by the company's Industrial Equipment Division to do a specific job effectively and economically.

The job: cleaning, rust proofing and coating strip steel direct from original coils. The finish is a special synthetic enamel which permits roll-forming after coating.

The first photo shows Rolling Steel Door strip stock painting system with infra-red oven. Photo on this page shows Steel Deck strip stock painting system with gas-fired oven.

of vertical movement. The paint is kept slightly warm so that its viscosity will promote quick and thorough wetting of the steel, and at the same time drain off quickly as the steel leaves the bath.

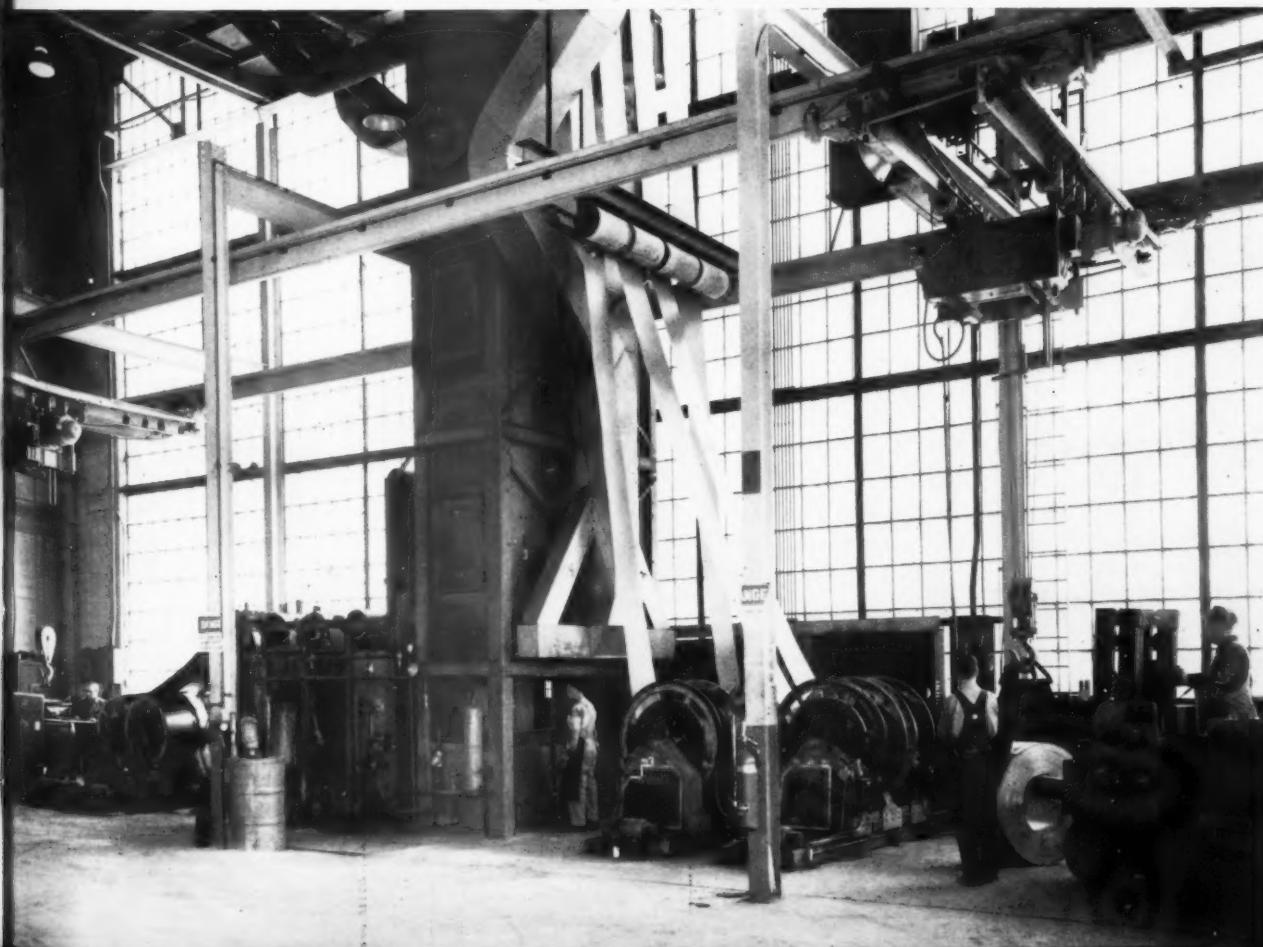
The baking oven is unusual in its

integration into the system. Fifty feet high, it follows the same plan of vertical movement of the stock by being built vertically up to and through the roof of the building. A "penthouse" on the roof contains the topmost eight feet of the oven. Baking is accomplished by banks of infra-red lamps in one of the machines, and by gas burners in the other. The enamel is baked at 350 F. and the steel moves through the oven at 12 ft. per min. After passing through a heat seal at the top of the oven, the strip moves downward to floor level outside the unit to be rewound onto the take-up coils at the end of the machine.

The ribbon of steel is kept continuous by spotwelding the end of each successive coil to the tail end of the preceding coil, making a simple lap weld. These joints are later cut out and discarded as the stock is processed in the roll-formers.

Prepainting the steel has an additional advantage in that the material is protected during storage before use.

Photo below shows steel deck strip stock painting system with gas-fired oven. On opposite page is shown rolling steel door strip stock painting system with infra-red oven.





Ray Sandin, right, manager of visual design, Hotpoint Company, studies new design of '54 refrigerators to be produced in new Chicago plant.

Designing an automatic electric appliance

much visual design planning and consideration of tooling goes into a new product—details of a typical product are included in this feature

by Ray Sandin • MANAGER, VISUAL DESIGN, HOTPOINT COMPANY, CHICAGO, ILL.



The Hotpoint Company has been designing and building electric ranges since 1910. Since that year, 3,700,000 ranges have been produced by the company. In spite of this formidable number,

this represents only about 28% of the total 13,000,000 produced by the range industry. In analyzing the electric range today, we will find that one differs very little from the other. All have ovens, broilers, warming ovens, storage compartments, heating units, control devices, deep-well cookers, lamps, bells and whistles.

Sizes and prices vary all over the map, and each and every manufacturer lays claim to the finest and the best. What then must a manufacturer, his engineers and his designers do to produce a range that will compete successfully with all the other brands, good, bad or indifferent?

What do our wives want in the

modern kitchen of today?

Does she want the rugged mechanical construction of yester-year with little grace and showing no attempt at pleasing the esthetic senses, or does she go into a swoon over the new super-duper bell ringing and whistle blowing, trim-laden outer space masterpiece of today? Does she buy a range as she buys her new chapeau? Something that is flashy and cute and different, which she can discard after using a little while? Or, is she thinking that this \$200 or \$500 work-saving device had better last for a year or two, J. Q. Public's income, with taxes and all, being what it is.

The problem becomes more and more complex. List prices of ranges are, after all, determined by manufacturing and distributors costs. Presumably, these costs are about the same for all manufacturers. In order to get our share of the dollar set aside by the consumer for electric ranges, we must have something to offer besides price. Here's where manufacturing know-how, engineering and styling must make itself felt to a higher degree than ever before.

90% of tooling

common to 7 range styles

The RB51 electric range produced by Hotpoint uses 90% of the tools that make seven sister ranges in the company's 1953 range line. The following brief description outlines engineering advances incorporated in this range:

Body — One-piece wrap-around. Adjustable leveling legs on all four corners. Titanium porcelain finish.



Oven capacity has been increased almost forty per cent on new low-priced 1953 electric ranges being produced by Hotpoint, giving user over 4700 cubic inches of usable oven space.

Three storage drawers on nylon rollers.

Oven — Completely new oven. Higher, deeper and more efficient. Recessed light that operates with opening and closing of the oven door.

Broiler — No preheating required. Smokeless broiler rack. As many as 12 steaks can be broiled in 10 minutes.

Heating units — Three heating units. Right rear "instant heat" unit is faster than the other two, and will prepare bacon and eggs in 3 minutes. Flattened coil design for greater utensil contact and efficiency.

Thrift cooker — Deep-well cooker. Six quart aluminum kettle for cooking several foods at the same time.

Cooking top — 25-13/16" deep by 39" long. Titanium porcelain finish. Rolled front edge to blend into curved front panels. High common type backsplash eliminated and only low slanted control mounting surface retained at back. This provides ease of cleaning and simplicity of design. Units located on left side to provide maximum work surface on right hand side.

Switch control knobs — New knobs engineered to fit the hand. Made in four parts using a stamped bezzel ring for the graduations, a molded plastic part for the knob proper with a two-piece insert in anodized aluminum and brass. Appearance design people working hand-in-hand with engineers and production experts arrived at a solution to this problem.

Lamp shade and timer housing — In order to build up this model from a low-cost and low-priced range having no lamp and timer, a separate structure was developed to fit on the integral low backsplash. The shade

to Page 68 →

New rotary switch controls on 1953 electric range are a special design developed by research to fit the hand. Controls are mounted at rear of new cooking top designed to permit flush installation of range against kitchen wall.



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WHERE

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heat and corrosion
problems for over
20 years



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Fahr alloy burning tools are the no. 1 choice
of the porcelain enamel industry



Since 1933 the name Fahr alloy has come to mean the answer to heat and corrosion problems of industry. And each answer has come about as a result of a thorough and individualized study of the particular problem. Fahr alloy views the alloying of chrome, nickel and other metals as the pharmacist views the doctor's prescription. There's no place for guesswork. In fact, it's the metallurgically correct composition of Fahr alloy castings that assures longer life under tough service conditions wherever high temperature is involved. Isn't it logical, then, to look to Fahr alloy for the answer to your burning tool problems?



THE FAHRALLOY CO.

150th & Lexington Ave. — Harvey, Illinois

In Canada — Fahr alloy Canada, Ltd., Orillia, Ontario

Outlook in principal consuming industries for porcelain enameled products

including the "short range" outlook for '53 and significant "longer range" factors

by *R. C. Myers* • DIRECTOR OF MARKET DEVELOPMENT, UNITED STATES STEEL CORP., PITTSBURGH, PA.

IN discussing the future prospects of porcelain enameled products, it seems necessary to use about the same approach that we, in United States Steel Corp., use to examine the potential demand for steel. Specifically, "What is the outlook in the industries that consume the products?" There are many facets to the enameling business involving, as it does, many diverse industries. However, in general there are three principal industries that represent the backbone of your business — the appliance industry, commercial construction activity, and residential home construction.

Despite the fact that there is a great deal of inter-relationship between these three large consuming segments, the economic factors that affect demand in each are sufficiently different that they require separate appraisal. Therefore, I should like to review each in turn with respect to the short range outlook for 1953, and to summarize a few of the significant longer range factors that will influence future activity.

Let's look at appliances

What do we see ahead then, for these industries? Let's look first at appliances. As you well know, this industry has just gone through a complete cycle of fluctuation in production and sales activity. Before Korea, both production and sales were at a high level, and inventories were pretty much in balance. The heavy buying following the outbreak of hostilities in Korea, and again when the Chinese Communists en-

tered the picture, pushed sales to record levels, and inventories were drawn down severely. However, production schedules were immediately stepped up and soon caught up with sales. Unexpectedly then, appliance sales dropped rapidly, beginning with the second quarter of 1951, and during the balance of that year, production far exceeded sales and huge inventories were acquired. During 1952, we saw a reduction of these stocks and now feel that, in general, production, sales and inventories are again in fairly good balance, as they were during the early part of 1950. Activity in 1952 staged a comeback in the latter half of the year to the extent total volume for the year was about the same as the 1947-49 level. The more normal and better balanced activity expected in 1953 should yield about a 10% increase in volume over 1952.

As for the longer range prospects — in general, they are good. New product lines with low consumer saturation add considerable strength. Change in model designs continue to stimulate replacement demand, and higher standards of living soon find their way into improvements in the home. New methods of financing appliance purchases by the home owners are expected to keep demand up. This system of financing major appliances by means of package and open-end mortgages has gone a long way and will continue to help expand the greater use of major appliances. Color, or the lack of it, a matter of considerable concern to all of you, will probably be one of the influences

on the future of porcelain enameled products.

The only minus sign on the horizon is the high degree of saturation of old line products such as refrigerators and stoves that must depend on new design for their demand. Of course, all these elements of future demand — new product lines, model changes, higher living standards, package and open-end mortgages — are strongly dependent on the over-all level of economic conditions, which is the common denominator for measuring all influences that go to make up the over-all demand.

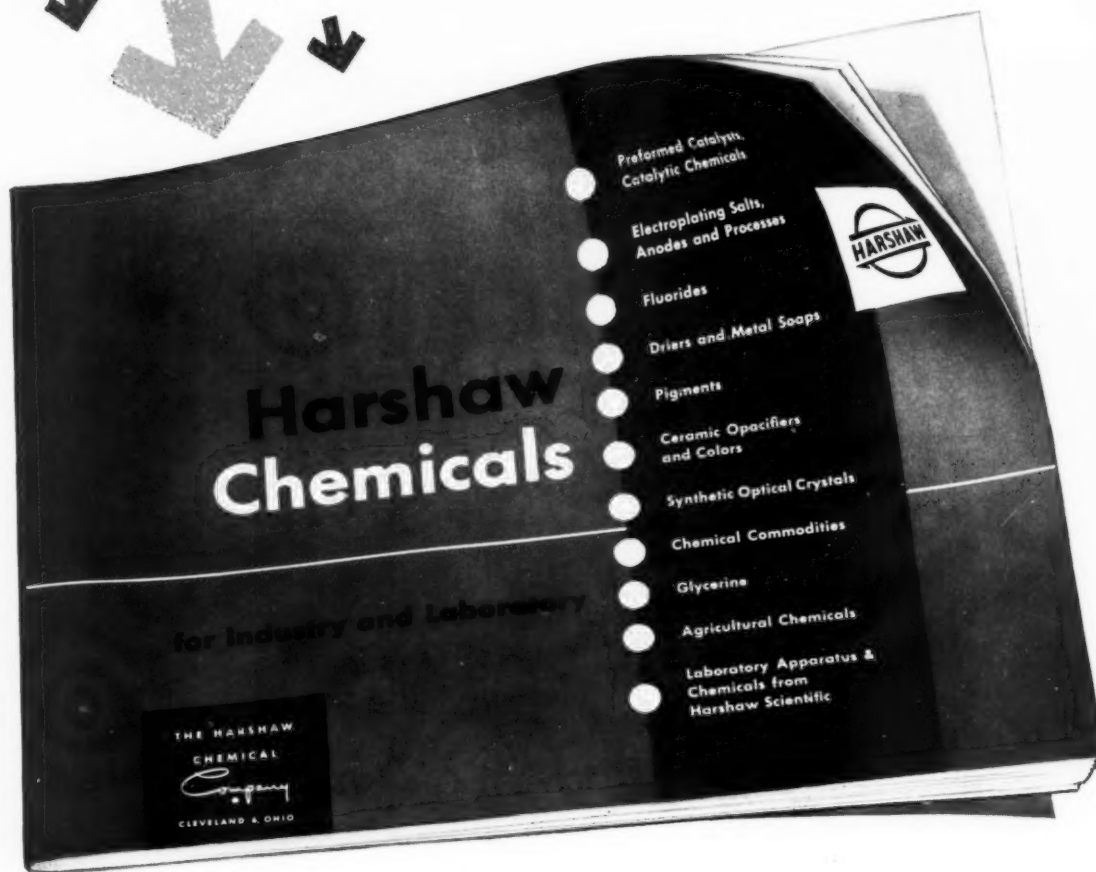
Commercial construction outlook

Shifting the "Ouija Board" to the commercial construction outlook, we see quite optimistic signs. Reference is made here to commercial, and some public, construction such as the building of stores, office buildings, shopping centers, filling stations, schools and hospitals, suburban railroad stations and amusement places. Activity in some of these lines has been restricted. It has not kept pace with the vast construction of new homes and the general "spreading out" process of modern living. Others, however, appear to be on the threshold of considerably larger marketing possibilities. The current nationwide need for facilities for our school children is creating possibilities for porcelain enameled panels for building construction for both exterior and interior purposes. Curtain wall construction in porcelain enameled products is well suited for schools. In-

to Page 66 →

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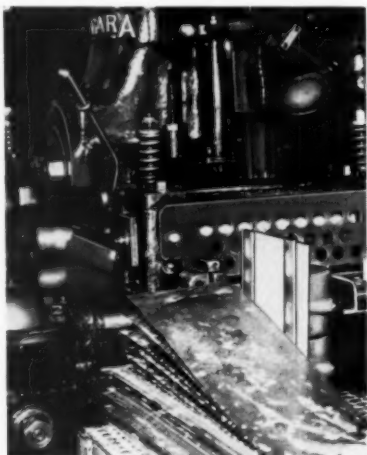
West Coast Warehouse, Laboratory and Office, 4747 E. 49th Street, Los Angeles, California

New

Supplies and Equipment

D-10. Automatic separator feeds one sheet to press at a time

New Costly breakdowns caused by feeding a press more than one steel sheet at a time need no longer be a production hazard. Also, the slow laborious job of an

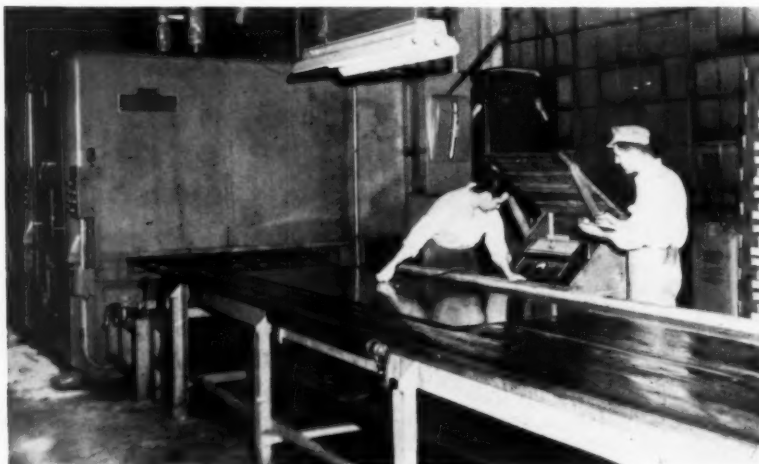


operator trying to pry apart steel sheets can be eliminated by use of an automatic steel sheet separator on the roll feed to the press. These magnetic units make the sheets automatically fan out at the end, permitting the operator to easily grasp the top sheet.

D-11. Metal finishing appliances within micro-inch readings

New A new technique utilizes a scientifically designed process to cool and clean the metal sur-

faces of appliances during polishing. With this process, sheet and coil stock can be finished to within micro-inch

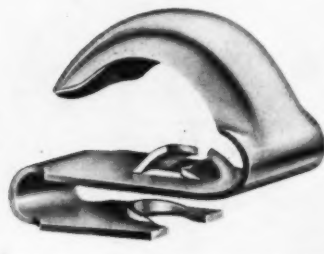


More Information

For more information on new supplies, equipment and literature reviewed here, fill out the order form, or write to us on your company stationery.

D-12. New fastener shield guards point of screw

New A new type speed nut, which shields the points of screws, provides protection against injury or product damage from screw point



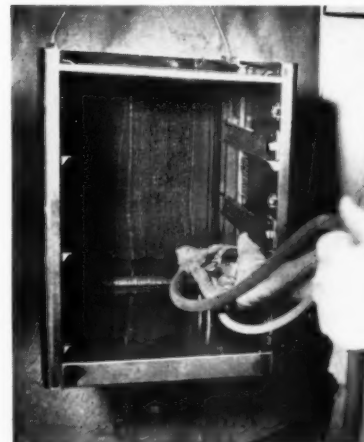
scratches. The hooded fastener has many potential applications in household and office furniture, or in sheet metal work wherever projecting screw points are a possible source of damage. The fastener has a rigid integral flap curving up and back over the point of the screw where it comes through the nut.

specifications. Use of the technique precludes the possibility of undesirable metallurgical reaction, as well as distortion or warping. Since the coolant is kept in constant flow and carefully filtered, even the tiniest abrasive particles are carried away, thus reducing grain marks and flaws to a minimum.

Scope of application includes home and commercial appliances — cabinet trim, sink and range tops, packing house and food processing equipment — instrument panels, display signs, etc.

D-13. Sound deadener for light metal products

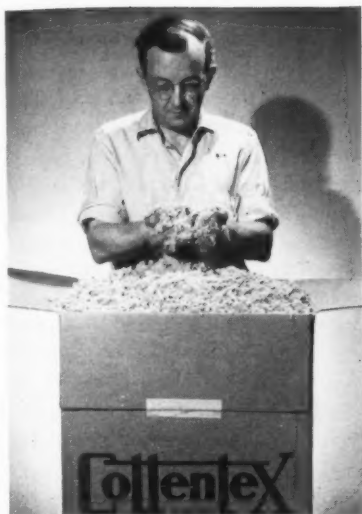
New A new sound deadener permits manufacturers of light metal products to give their equipment a heavy solid feeling with sound



hushing ability. Applied by wipe-on or spray equipment, the sound deadener can be baked at temperatures as high as 325°F., without loss of bond, blistering, flow, or any striking through of the paint, except when light shades are used.

D-14. New degreasing agent for use in tumbling mills

New A new finely ground cellulose fibre with high absorbency, called Cottentex, is available for use in degreasing and drying operations employing tumbling mills.



Absorbing more than 8 times its own weight, the material does a fast, thorough job of absorbing oils, grease or any liquid from metals. It is particularly adapted for cleaning and degreasing parts which can be processed in a tumbling mill. A free sample will be sent upon letterhead request.

D-15. Three-stage machine applies drawing lubricant to sheets

New A new machine has been designed for the application of drawing lubricants to sheets and blanks. Materials can be processed through this machine at speeds up to 55 feet per minute.

Three separate operations are performed. Sheets or blanks to be coated enter the washer unit. Here rotary brushes clean the stock with an alkaline cleaner. Operation of brushes on both top and bottom of material during wash and rinse stages is said to assure fast, positive cleaning.

Cleaned stock then enters the self-

D-16. New half-second butyrate for use in metal lacquers

New Spraying lacquers containing up to 17% solids made from the new safe-to-handle and highly compatible butyrate are said



to exhibit greater color stability, resistance to weathering and ability to withstand underwater immersion without whitening or peeling. The half-second butyrate is said to produce excellent metal lacquers.

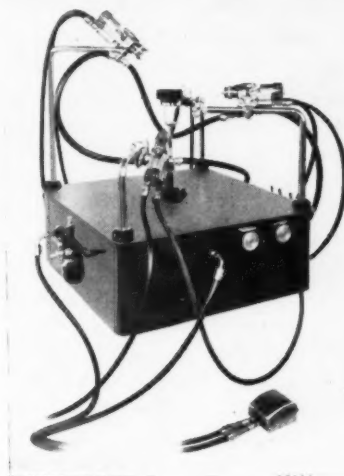
contained coating unit where it is handled in a horizontal position for easy loading and stacking. The steam-heated, fully-enclosed solution tanks can handle blanks up to 48 inches in width. The manufacturer states that the machine assures even, sure coating for maximum drawing compound economy.

After coating, the stock enters the drying element which is available with steam, gas or electrically-heated ovens. It is claimed this dry-coated material is clean and easy to handle, that it can be safely stored for long

periods, and then formed with no need of additional lubricant.

D-17. Automatic single-spindle finishing machine

New A new automatic single-spindle painting machine is said to be ideal for short-run operations. It can be used in most stand-

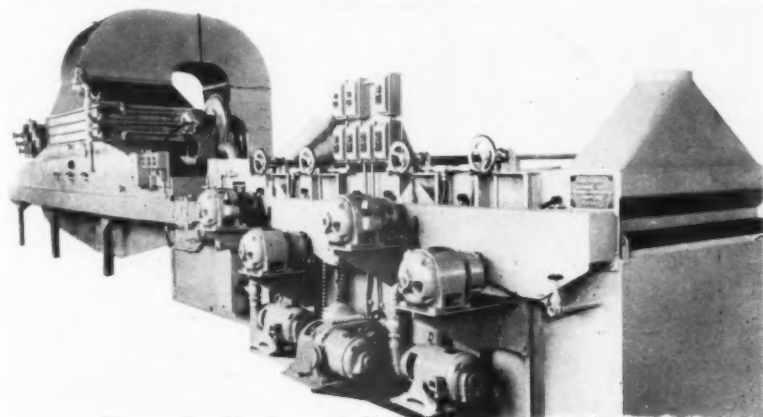
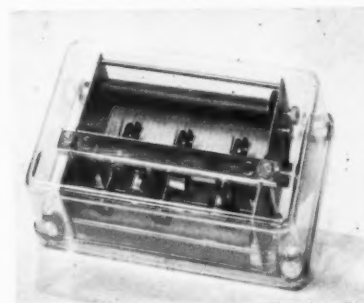


ard spray exhaust booths. One dial regulates the spindle speed from 100 to 400 rpm, while a second dial controls the length of time the spray guns operate. The spindle and guns go into action at the touch of a foot pedal, but stop automatically as predetermined by the dial settings.

The speed of operation is dependent upon the required loading time, which in turn is controlled by the nature of the ware being sprayed and by whether masking devices are employed. Provision is made for mounting up to four guns.

D-18. New "baby" shock recorder

New This new "baby" shock recorder, for tracking down the causes of shipping damage, is small and lightweight (1 lb., 6 oz.).



It is recommended by the manufacturers for applications where the time element is not important. It is suggested for drop tests, incline impact tests, and tests where frequency as well as intensity of shock is required. The clear plastic case makes it easy to "read" the shock results as the trip progresses.

D-19. Anti-corrosion coating uses neoprene coatings

New After three years of testing under the most severe corrosion conditions by the producer, a new system of anti-corrosion coating using specially-formulated neoprene coatings has been introduced. The system is reported to have resulted in savings up to 50 per cent per square foot in maintenance painting and coating costs.

In a number of cases, it was reported that the overall initial cost of using the new system appeared to be higher than other methods, but measured against maintenance painting costs over several years, the new system was about half that of other systems.

Industrial literature

401. "Machine Shop Tooling"

New This pocket-size 344-page "Machine Shop Tooling" manual contains data for machine tool operators and machinists. It is alphabetized like a dictionary so that machinists can easily find the answer for common machine shop problems like cutting tool angles, feeds, speeds,

or deciding which lubricant to use.

Said to be the first book designed expressly for the man at the machine, it gives specific recommendations for drills, taps, milling cutters, grinding wheels, threaders, turning tools, special threads, etc. Price is \$3.00 a copy.

402. Rigid metals folder

New A new 6-page folder explains how Rigid-tex metals combine beauty with increased struc-



tural and functional properties. Photographs of three-dimensional patterns, damage tests, comparisons of plain flat metals with design-strengthened metals and typical applications give an introductory picture of Rigid-tex metals. Strength properties, decorative qualities and functional advantages are outlined. Brief fabrication data is included. The two-color folder states that the metal is available in various ferrous and non-ferrous types, in sheet or strip, coils or cut-lengths, solid or perforated in over 25 exclusive patterns.

403. Sixty-page dictionary on steel industry lingo

New This new 60-page "dictionary" contains more than 550 "Common Terms and Express-

sions Used in the Steel Industry." It presents definitions of the technical lingo peculiar to the steel industry.

Among the many words defined are: killed steel, ingot iron, mill finish, plastic deformation, process annealing, initial creep, hot rolled, elastic limit, corrugated sheets, stretcher leveled standard, tailings, tin plate, uncropped coils, virgin metal, tobacco hogshead hoop, white metal, deseaming, drawing quality, carburizing, and alligator shear.

404. Centrifugal blower catalog

New This catalog contains information on centrifugal pressure blowers which provide constant, dependable air supply for all types of combustion equipment. Dimensions and specifications are included.

405. Chart on composition of industrial metals

New A new unusual metals chart shows the compositions of all commonly used metals and alloys in industry. The chart lists the constituent elements and the percentage composition ranges for 60 different classes or types of metals arranged in the following groupings:

Light metals, irons, steels, cobalts, nickels, coppers, white metals, precious metals, heavy metals and specific purpose metals.

Also shown is the atomic number and specific gravity of each of the 43 elements commonly encountered in industrial metals. *Copies of the chart will be sent free to readers requesting it on their company letterhead.*

406. "Complete Finishing Systems"

New A new 16-page catalog on "Complete Finishing Systems" illustrates and describes a wide variety of finishing systems and equipment. Both integral (self-contained) systems and unitized types are covered. Examples shown cover small and large parts.

Processes outlined include: pretreatment — acid, alkali or solvent cleaning; paint application — by spray, dip or flow; drying — using gas, steam, oil or electric heat and make-up air — replacing plant air exhausted by the three previous operations.

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Please forward to me at once information on the new supplies and equipment and new industrial literature as enumerated below:

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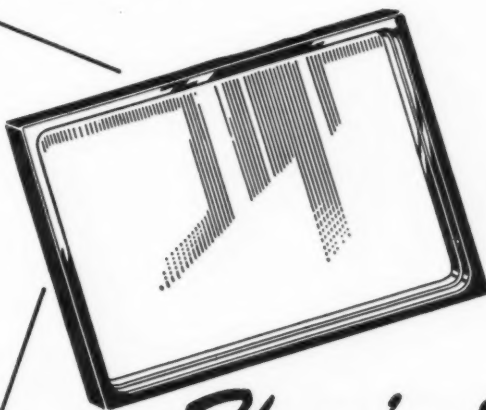
for **RANGE MANUFACTURERS**

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A growing list of manufacturers are finding that the Perma-View Oven Door Window is an important sales feature for their ranges.

More top line range manufacturers in the United States and Canada are using the Perma-View "visible baking" sales feature in 1953 than in any preceding year.



Here's Why



Perma-View lends salable beauty to your product. All that meets the eye is crystal clear tempered glass and gleaming chrome trim—no unsightly sealing strips are visible—yet—Perma-View is perfectly sealed so that the crystal clear visibility is retained—*Year after Year*.

Perma-View comes to you ready to assemble into *your* oven door—"Out of our carton into your oven door"—lending time-saving and space-saving economy on your assembly line.

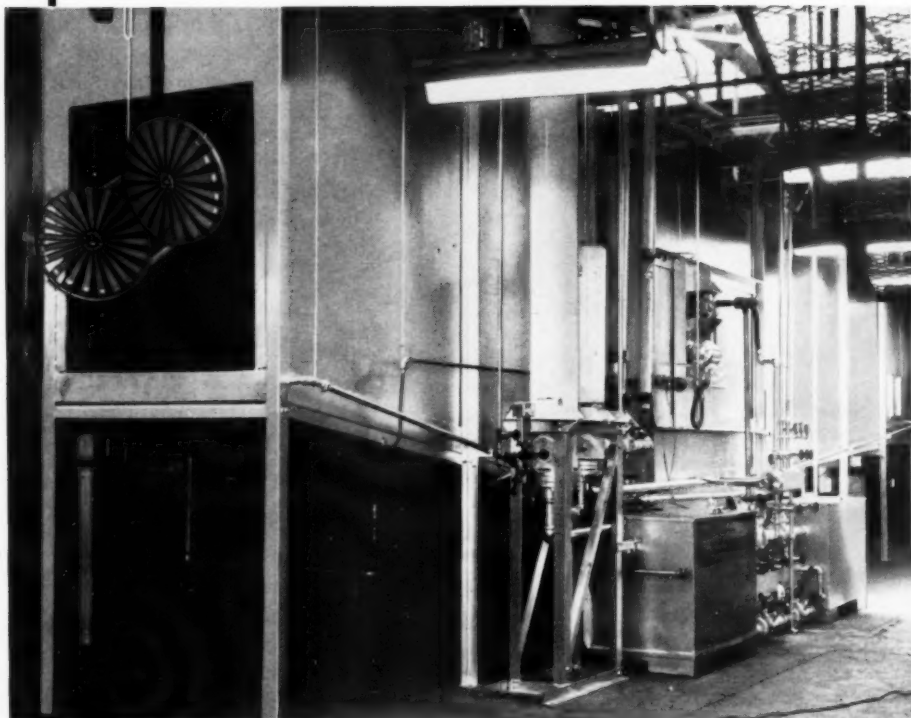
Perma-View is made in sizes to suit your door—aesthetically correct—Perma-View engineers will gladly assist you in selecting the proper window for your oven door. Just write or phone —Perma-View will be on the job immediately with the kind of product and service you have hoped for.

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Work entering Spra-Con automatic paint applicator at the plant of
The Troy Sunshade Co., Troy, Ohio.

This is another Spra-Con automatic paint applicator installed in the plant of a leading manufacturer of metal furniture.

This automatic paint applicator eliminates prime coat spray booths — air make-up systems — all paint overspray — spray gun operators — maintenance of booths — guns, etc.

Other Spra-Con equipment in the system includes gas-fired dry-off oven, 4" Trolley Conveyor, 5-stage Bonderite Unit, and Direct-Fired Roof Ovens—for prime coat and finish bake.

For complete information on this paint and labor saving equipment, contact —

The Spra-Con Company—

3600 Elston Ave. Chicago 18, Ill.

Automatic finishing for metal furniture

new continuous finishing system incorporates flow coating and electrostatic spraying

by *R. J. Deisenroth* • METHODS & PROCESS ENGINEER, THE TROY SUNSHADE CO., TROY, OHIO

OUR new automatic, continuous finishing system is as strikingly different from our former methods as our present line of products is different from our original products.

In 1887, The Troy Carriage Sunshade Company was founded and be-

windshields, cab door ventilating windows; seats, sash, stanchions and grab rails for motor buses and railway coaches; metal awnings and door canopies.

The company has expanded steadily — both in products and personnel — until our present factory occupies some 450,000 square feet of floor space, and employs around 700 people.

With increased production de-

mands — especially in the metal furniture line — it became necessary for us to completely overhaul . . . modernize . . . and centralize our finishing operations. Painting was spread out over the entire plant. Only two areas were conveyORIZED — one of these for a dip set-up; and there were four hand spray shops, with different

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Editor's Note:

Mr. Deisenroth's articles should be of interest to all who are considering coordination or modernization of paint finishing facilities. Editors of *finish* also wish to give credit to The Glidden Company, of Cleveland; The Spra-Con Company, of Chicago, and Ransburg Electro-Coating Corp., of Indianapolis, for descriptive photos and accompanying technical information furnished for effective illustration of this feature.

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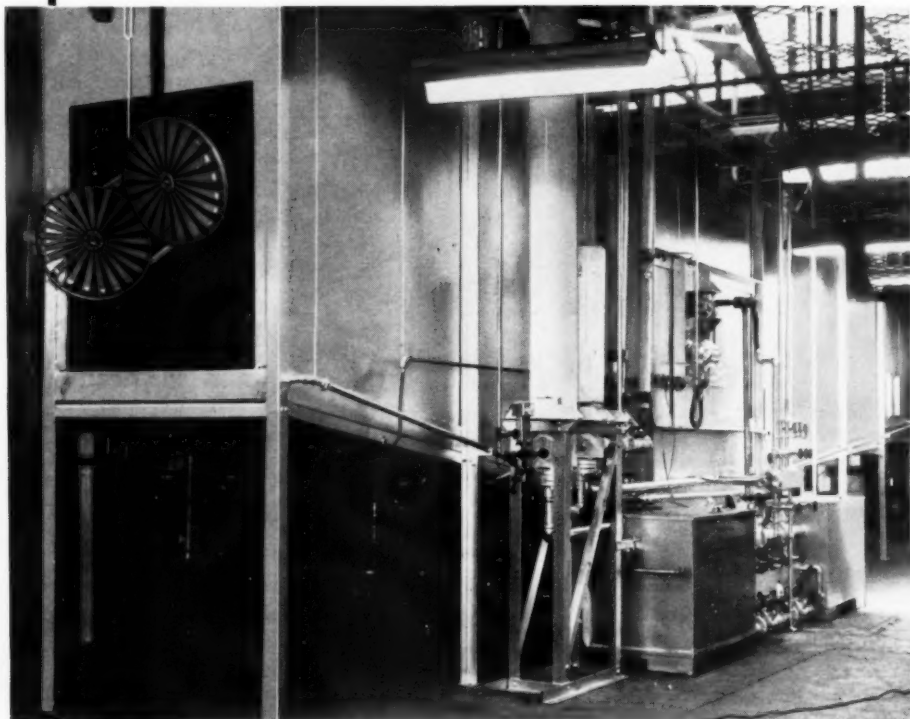
Contrasted with those original surrey sunshades is the Troy "Deauville Casual Americana" — a beautiful line of wrought-metal, indoor-outdoor furniture. It was created for American leisure living by the noted designer, J. Cecil Witty, whose "Troy-loafer" — an indoor-outdoor reclining chair — was selected by the Museum of Modern Art for inclusion in its Exhibit of Good Design. It's one of those versatile, contour chairs for year 'round use — indoors and outdoors.

Other well-known Troy products are porch and lawn furniture, including chaise lounges, garden and beach umbrellas, metal tables and chairs; aluminum furniture; truck

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Finishing system layout—





Work entering Spra-Con automatic paint applicator at the plant of
The Troy Sunshade Co., Troy, Ohio.

This is another Spra-Con automatic paint applicator installed in the plant of a leading manufacturer of metal furniture.

This automatic paint applicator eliminates prime coat spray booths — air make-up systems — all paint overspray — spray gun operators — maintenance of booths — guns, etc.

Other Spra-Con equipment in the system includes gas-fired dry-off oven, 4" Trolley Conveyor, 5-stage Bonderite Unit, and Direct-Fired Roof Ovens—for prime coat and finish bake.

For complete information on this paint and labor saving equipment, contact —

The Spra-Con Company—

3600 Elston Ave. Chicago 18, Ill.

Automatic finishing for metal furniture

new continuous finishing system incorporates flow coating and electrostatic spraying

by *R. J. Deisenroth* • METHODS & PROCESS ENGINEER, THE TROY SUNSHADE CO., TROY, OHIO

OUR new automatic, continuous finishing system is as strikingly different from our former methods as our present line of products is different from our original products.

In 1887, The Troy Carriage Sunshade Company was founded and be-

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windshields, cab door ventilating windows; seats, sash, stanchions and grab rails for motor buses and railway coaches; metal awnings and door canopies.

The company has expanded steadily — both in products and personnel — until our present factory occupies some 450,000 square feet of floor space, and employs around 700 people.

With increased production de-

mands — especially in the metal furniture line — it became necessary for us to completely overhaul . . . modernize . . . and centralize our finishing operations. Painting was spread out over the entire plant. Only two areas were conveyORIZED — one of these for a dip set-up; and there were four hand spray shops, with different

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Finishing system layout→



UNLOAD

LOAD

FINISHED COAT BAKE OVEN 30 MIN. AT 300°F

PRIME COAT BAKE OVEN 30 MIN. AT 300°F

ELECTROSTATIC SPRAY BOOTH

SPRAY-BOOTH

SPRAY BOOTH

5 STAGE METAL PREP

DRY-OFF OVEN
4 MIN. AT 400°F

PAINT TANK

CONTROLLED
ATMOSPHERE
DRIP CHAMBER

PAINT APPL

PRE-DRY CHAMBER



Above: Loading ware on overhead conveyor feeding 6-stage metal preparation — alkali, rinse (hot), phosphatize, rinse (room temperature), chromic acid, and dry-off.

Right: Ware entering the 6-stage metal preparation equipment at Troy Sunshade.

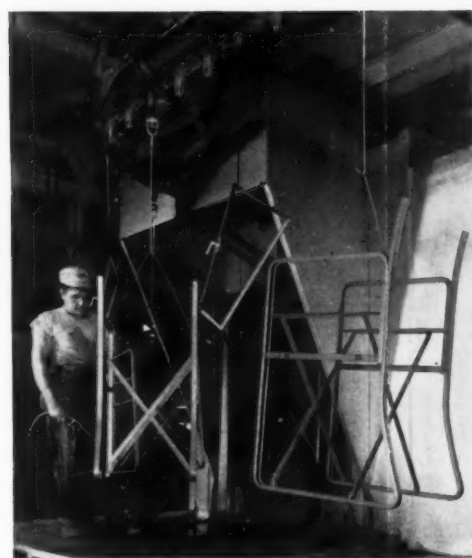
SYSTEM DESIGNED & MANUFACTURED
FOR A CONVEYOR SPEED OF 10'-0" PER



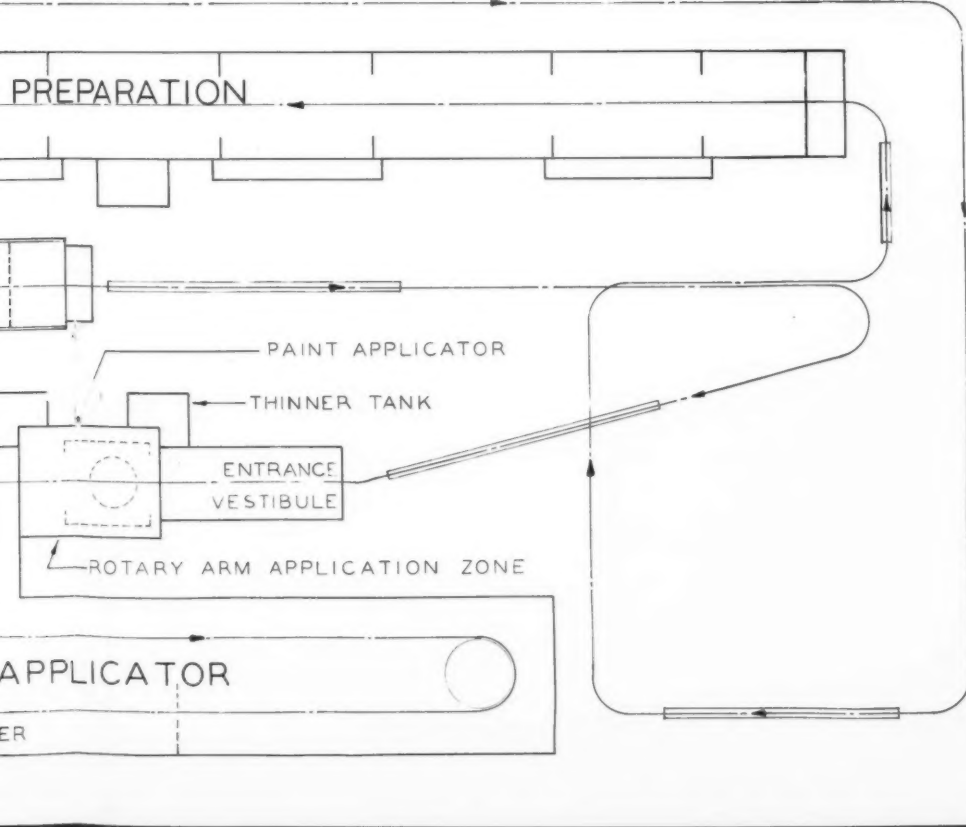
Right: Unusual photo showing interior of a flow-coat applicator in vapor drain section. Ware at left is leaving applicator section. Ware travels over photographer, on conveyor on right, to back of picture, where it enters a "set-up" oven at about 150° to 180° F. This set-up oven is to control film thickness.



Right: Blow-off of excess moisture from recesses in ware at point between chromic acid stage and dry-off oven.



ED
0'-0" PER MIN



Below: All colors are fed from 60-gallon pressure tanks through common piping system. White feeds from paint mixing room through closed circulating system. As colors are changed system is flushed with wash thinner, fed from drum in foreground by air pump. Colors include white, two blacks (flat for furniture—gloss black for transportation equipment), red, green and blue, plus OD for defense work.



baking facilities — batch ovens and infra-red.

An "automatic" paint line

We devoted months of careful study and planning in our investigation of all available modern methods — finally selecting flow-coat for application of primer and electrostatic spray for the finish coat. Now, all painting operations are handled on one continuous conveyor 2200 feet long. Unpainted pieces (parts and complete assemblies) are loaded at

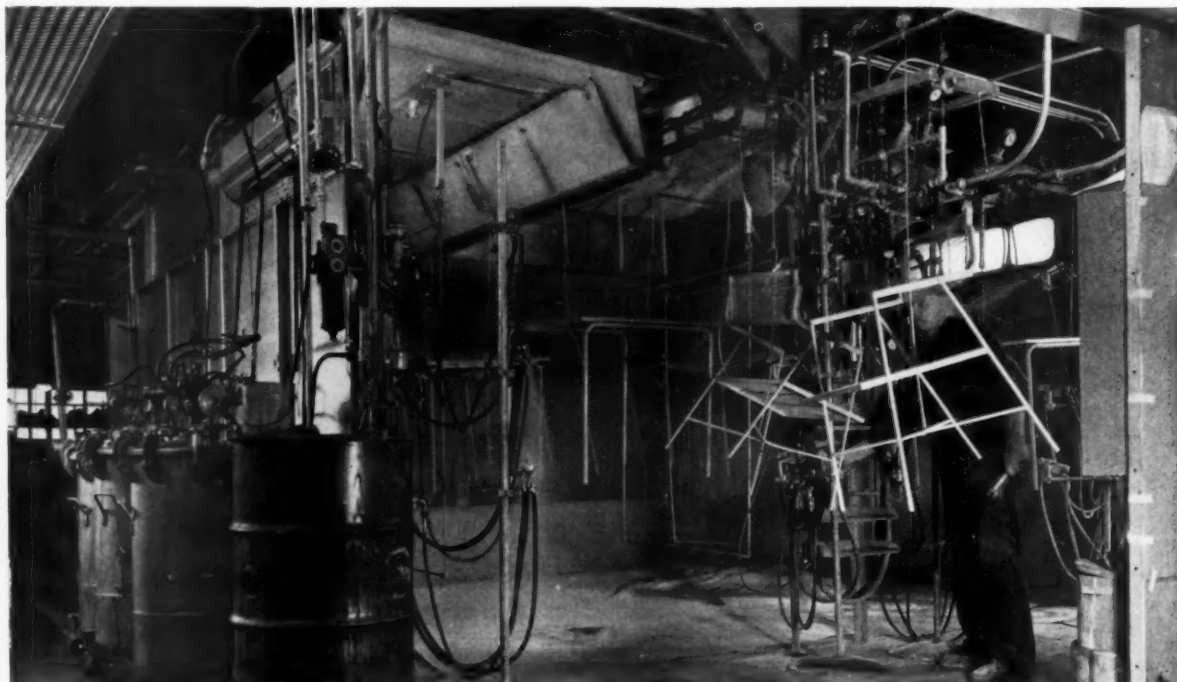
one end of the line, automatically painted as required, unloading at the other end and packed into shipping cartons — with no handling or trucking in between.

After the prime coat is applied, the work of various sizes and shapes travels at an average speed of 10 fpm through the indirect, gas-fired roof ovens, and then through the electrostatic spray unit. This is a double unit in a U-type booth, which makes it possible to give some parts a single or double pass and to spray others

from both directions. Twelve automatic spray guns are in place, and they can be used in any desired combination to provide the extreme flexibility required to accommodate our smallest and largest parts. After passing through the spray booth and hand touch-up station (necessary for shielded areas on some parts), the work travels for 20 minutes through the overhead ovens, and then to the shipping department.

Our new finishing department is

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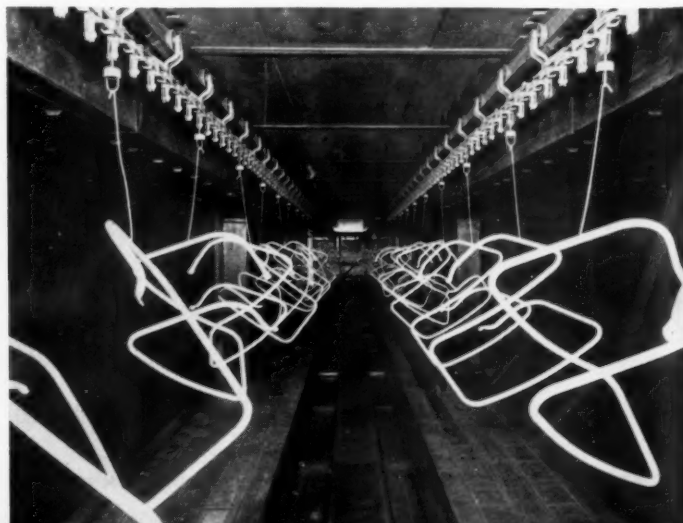


Prime-coated ware moves at 10 fpm into the electrostatic spray booth for the finish coat. Maximum flexibility is provided in this automatic paint unit by use of a double-pass booth and a maximum of 12 spray guns. Parts and assemblies for many different types of indoor-outdoor furniture are easily handled in this unit.

Exterior view of oven enclosure which houses two U-type ovens, for prime and finish coat respectively. An insulated center barrier separates the two ovens, allowing individual heat control.



Interior view of finish coat U-type oven which provides for 30-minute bake at 300° F. Ware is currently being run at a chain speed affording a 20-minute bake. Oven heater unit is hung from ceiling.



Outdoor telephone booths of aluminum, porcelain enameled steel and glass

by Elsa Gidlow • BASED ON AN INTERVIEW WITH *S. F. Damkroger*, GEN. SALES MGR.,
THE PACIFIC TELEPHONE & TELEGRAPH CO., SAN FRANCISCO, CALIF.

THE first important improvement in the humble telephone booth has been made as an outgrowth of an altered attitude towards this phase of its service by Pacific Telephone and Telegraph Company whose headquarters are in San Francisco. This company has begun to construct its outdoor telephone booths of metals and ceramic materials.

The outdoor telephone booth

Putting telephone booths outdoors to the extent that this company has done within the past few years is in itself something new and the reason why superior materials were sought. Up to the end of World War II, the West Coast company, like others the country over, had very few, in spite of the increasing emphasis of Californians on outdoor living. Then the company realized that these outdoor booths were being heavily used.

S. F. Damkroger, the company's general sales manager, says "This heavy outdoor usage awakened us to the fact that we had something additional to sell — 24-hour public telephone service." So well has this service been received that California today has some 12,000 of the outdoor

booths in very active use at or near service stations, at transfer points of public conveyances, beside drive-in restaurants, motels, in camp grounds, picnic spots, parks, and at baseball diamonds and similar places.

With acceptance assured and growing and other telephone companies the country over sitting up and taking notice, Pacific Telephone gave close study to improving the design and construction of the booth, whose

forest green body and white peaked roof had already become a familiar sight. Over a year ago the company began testing a streamlined booth using an aluminum frame, porcelain enameled panels and plate glass. This booth has some features which make it the most attractive, convenient and comfortable booth yet devised.

The upper half of the walls and door are of safety plate glass, the

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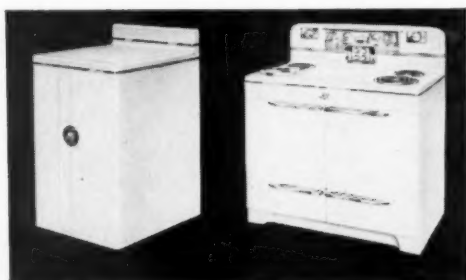
This new telephone booth is installed in an Associated Service Station in downtown San Francisco. C. E. Housman (center), maintenance supervisor for Pacific Telephone, who designed this type of booth, is explaining its merits to R. B. Crocker (left), a Pacific Telephone district manager, and to M. S. Pease, retail sales manager for Tide-water Associated Oil Co.

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"WE HAVE NOT SCRAPPED A TOP, BACKGUARD OR FRONT"

Says H. J. BERMAN
Executive Vice President
A. J. Lindemann & Hoverson Company



The profitable steel saving experience of A.J. Lindemann & Hoverson Company, manufacturers of electric ranges, water heaters, refrigerators and home freezers typifies that of other appliance manufacturers who have learned how D-Enameling* transforms defective enameled parts into first class production parts that now contribute to the profit picture. In fact, D-Enameling has made it possible for Lindemann and Hoverson to recover all defective tops, backguards and fronts which otherwise would have been a complete loss as scrap.

D-Enameling can mean the difference between profit and loss. It will pay you to investigate the possibilities that D-Enameling offers you. In fact, we'll prove its benefits at our expense! All you need do is write, wire or phone us so that we can make arrangements to D-Enamel three or four parts NO CHARGE. When you see the results and learn how inexpensive D-Enameling really is . . . how it may help your profit picture, you'll be sold. Just get in touch with us. Do it today . . . now!

*D-ENAMELING IS A PATENTED PROCESS.

D-ENAMELING SAVES DOLLARS...
D-ENAMELING SAVES STEEL

Since October 1949, D-Enameling has saved over 20,000 tons of fabricated steel parts.



New Process D-Enameling Corp.

Highland and New Haven Avenues • Aurora, Illinois

NEWS

OMELIANCHUK TO SCHAEFER AS DESIGN ENGINEER

Announcement was made by Schaefer, Inc., Minneapolis, manufacturer of ice cream cabinets and home freezers, that Paul Omelanchuk has joined the company as design engineer, in charge of new product development and the engineering laboratory. He was formerly with the development department of the Deep-freeze Appliance Division, Motor Products Corp.

PORCELAIN METAL UPS TWO

J. R. Sweeny, president of Porcelain Metal Products Co., Carnegie, Pa., has announced the promotion of A. F. Petan to the post of sales representative. In his new position, Petan will be active in the porcelain enamel sign and architectural porcelain sales field.

Petan is being succeeded as superintendent of the enameling department by H. C. Karadeema.

ADMIRAL NAMES NEW HOME ECONOMICS DIR.

Mrs. Vivian Overand has been named director of home economics of Admiral Corporation, to succeed Miss Willie Mae Rogers who resigned to become director of the Good Housekeeping Institute. Mrs. Overand was formerly northwestern director of Westinghouse Home Economics Institute, in charge of an 11-state terri-

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tory. She is national treasurer of the Electrical Women's Round Table, Inc.

MILLER HEADS MFG. FOR G-E APPLIANCE DIV.

Appointment of Halbert B. Miller as manager of manufacturing for



General Electric Company's major appliance division has been announced by Clarence H. Linder, vice president and division manager. Previously, Miller was manager of manufacturing for the industrial heating department at Schenectady.

WHIRLPOOL ANNOUNCES FIVE MAJOR PROMOTIONS

Five major promotions in the field of production management and finishing operations were announced by Whirlpool Corp., St. Joseph, Mich. William Fowler was promoted

from production manager to assistant works manager, directly under plant works manager Otto Krauss. Fowler will have responsibility for planning and scheduling automatic washer and dryer production.

Stanley Burns, named superintendent of finishing operations, will be responsible for all processing connected with finishing in Plants 1 and 4, reporting to Krauss.

Further promotions in production management were: Steve Wendelken, advanced to production manager; Clarence Freeman, named assistant production manager, to succeed Wendelken; and Herb Clements, former Plant 4 expeditor foreman, who steps into Freeman's former position as production control foreman in Plant 4.

NESCO ACQUIRES STOCK OF STEELWARE MFG.

All the capital stock of Steelware Mfg. Co., Los Angeles, has been acquired by Nesco, Inc.

The California company, which becomes a wholly-owned subsidiary of Nesco, is primarily a manufacturer of specialty tin cans. Other products are lithographed waste baskets and pantry ware.

Ralph Simon and Jerry Conrad, former owners, will become vice presidents of Steelware, and continue as operating executives.

At the same time, Nesco reported that it has sold its pieced and stamped tinware business, including equipment, to Parkersburg Steel Co., Parkersburg, Va., to make way in its Baltimore plant for expansion of lithographed and galvanized ware production.

DESIGNERS MEET IN LOUISVILLE TO EXCHANGE IDEAS

Plans for a continual exchange of information and ideas on design practices in industry were formulated by eight leading manufacturers at a recent design directors conference in Louisville, Ky.

A. N. BecVar, manager of product planning for General Electric's major appliance division, host for the meeting, said similar conferences will be

held at various company headquarters on a rotating basis. The next meeting is scheduled for the latter part of May at Corning Glass Company's "Glass Center," Corning, N. Y.

According to BecVar, the group will explore design practices of each of the participating companies. Specialists in fields related to design will be invited to lead "round-table" case study discussions.

Companies represented at the conference were General Electric, Towle Mfg., Eastman Kodak, Libbey-Owens-Ford Glass, Corning Glass, Reynolds Metals, International Business Machines, and Container Corp. of America.

MODERN REFRIGERATOR

PRODUCING COLORED RANGES

Modern Refrigerator Co., Brooklyn, N.Y., has introduced a line of budget priced apartment size, 30" and 36" gas ranges, available in four decorator colors in addition to standard white.

According to Marvin Kane, general manager, the firm is believed to be the second producer of all colored porcelain gas ranges. An electric

range line also is planned. The ranges are available in red, yellow, blue and green.

After Round Oak Co. sold their electric and gas range line to Stratton Terstegge, of Louisville, Ky., Modern Refrigerator acquired the tools, dies and inventory of the original Round Oak line of electric and gas ranges from Stratton Terstegge. The equipment was shipped to the Brooklyn plant, where it is now supplementing Modern's own facilities.

20,000 STORES PROMOTE "COLOR KITCHENS" TIE-IN WITH MCCALL'S FEATURE

Some 20,000 appliance, paint, hardware, floor covering and department stores across the country are now merchandising "Kitchens Bright With Color," based on a 4-page feature by Mary Davis Gilles, *McCall's* houses and home fashions editor, in the March issue of *McCall's*.

Youngstown Kitchens, maker of kitchen cabinets, is sponsoring this coordinated decorating program in which each of six manufacturers is distributing merchandising and promotion material, based on the *Mc-*

Call's feature, to their own dealers. Mrs. Gillies decorated nine kitchens, using draperies, wall coverings and decals designed by the Associated American Artists, commissioned especially for the project by Youngstown. Five of these kitchens appear in March *McCall's*.

DIXIE "GRIDDLE" RANGES

Newest additions to the line made by Dixie Products, Inc., Cleveland, Tenn., are two "griddle in the middle" gas ranges. Both models are available with a fifth burner in the center, with interchangeable griddle and grate.

BORG-WARNER REORGANIZES TOP EXECUTIVE STAFF

Reorganization of the top executive staff of Borg-Warner Corp. has been announced by Roy C. Ingersoll, president.

L. G. Porter, treasurer, becomes administrative vice president and treasurer; R. S. Ingersoll, president of Ingersoll Products Division, was named administrative vice president of the parent corporation; and Robert W. Murphy, general counsel, was elected vice president and general counsel.

Murphy will also continue to head the legal department of Borg-Warner. Porter and R. S. Ingersoll each will assume executive supervision of a group of divisions and subsidiaries within the corporation, with Ingersoll retaining the presidency of the Ingersoll Products Division, Reflectal Corp., and the Petro-Mechanics Research Division.

WESTINGHOUSE MFG. DIVISION ANNOUNCES EXECUTIVE APPTS.

A reorganization of the headquarters manufacturing division of Westinghouse Electric Corp. has been announced by T. I. Phillips, vice president in charge of manufacturing.

C. G. Wallis, former manager of the headquarters manufacturing department, will now serve as assistant to the vice president; L. S. Houk, as director of works engineering; N. H. King and R. I. Wilson, director and

Souther Iron's exhibit—at a recent Products Display Show sponsored by the Purchasing Agents' Association of St. Louis. The company exhibited its line of products "as advertised in finish."



assistant director, respectively, of production and inventory control; G. C. Moore, director of plant industrial engineering; V. D. Mack, supervisor of manufacturing student training; and Joseph Manuele, director of quality control.

According to Phillips, reorganization of the division has also involved creation of a new department known as the manufacturing and equipment engineering department. Heading up this department will be: Edward Griffiths, director of expense control; W. H. Dickinson, director of manufacturing engineering; and G. P. Longabaugh, equipment engineer.

COOLERATOR LAUNCHES NEW ROOM AIR CONDITIONERS

The Coolerator Company has launched a new line of deluxe window type room air conditioner models, all backed by heavy national and key dealer advertising programs. The new models will fit into a window as narrow as 24 inches, with cabinet designed as a home furnishing. Its neutral mirror-tone finish is reported to pick up surrounding colors for perfect decorative harmony. Vents located on the front of cabinet permits draperies to hang flush along side without becoming soiled or cutting down air intake. Flat-top surface allows venetian blinds to hang even with the top.

GRUMMAN AIRCRAFT BLDG. TO UTILIZE ALUMINUM-FACED "SANDWICH" CURTAIN WALL

A new lightweight, laminated, sandwich-type curtain wall material with aluminum facing will be introduced in the exterior construction of the new Peconic River Plant administration building of Grumman Aircraft Corp., now under way in Calverton, Long Island.

Approximately 3,300 sq. ft. of wall area will be constructed of the new material, with individual panels measuring 5' high by 7' in length. Each panel will have a front face of 20-gauge anodized aluminum, a four-inch insulating core, and a 20 gauge sheet steel backing.

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The anodized aluminum facing provides an esthetically pleasing, silvery gray color and requires no painting.

Seaporcel Metals, Inc. will fabricate the curtain wall panels in its Long Island City plant, and will handle installation.

LANGFELD TO DIRECT PURCHASES AT MAYTAG

William F. Langfeld, former director of purchases for Material Serv-



ice Corp., Chicago, has been appointed director of purchases for The Maytag Company, Newton, Iowa, filling the vacancy created when C. W. Clauser was appointed personal assistant to the vice president in charge of manufacturing.

BEANE HEADS BRISTOL SALES

The Bristol Co., Waterbury, Conn., has announced appointment of Harry E. Beane as vice president-sales. The company manufactures automatic controlling, recording, telemetering, and aircraft instruments, plus socket screw products.

SERVEL NAMES SCARLETT MGR. OF MFG. ENGINEERING

J. A. Scarlett has been named to the newly-created position of manager of manufacturing engineering for Servel, Inc., it was announced by Theodore L. Pantz, vice president of manufacturing. Previously, Scarlett was general superintendent in charge of tools, processing and layout for Seeger Refrigerator Co., Evansville, Indiana.

THOR REVEALS REFRIGERATOR PLANS IN ANNUAL REPORT

Thor Corporation's annual report revealed that the company is planning to bring out a line of refrigerators this year.

The report stated: "During the latter half of 1952, the Company entered the growing Home Freezer field and is aggressively bidding for our share of this expanding market. By the Spring of 1953, we will also have a Thor Refrigerator line. This line will be made and sold in all of the popular sizes."

MORE COMPANIES ENTERING HOME AIR CONDITIONING FIELD

Companies which are reported to have announced plans for entering the domestic air conditioning field include Sterling Air Conditioning Corp., Charlotte, N.C.; Dayton Pump & Manufacturing Co., Dayton, Ohio; York-Shipley, Inc., York, Pa.; and Chelsea Fan & Blower Co., Inc., Plainfield, N. J.

FERRO NAMES McCORD CERAMIC SALES MGR.

A presstime release reports that John R. McCord, formerly manager of the appliance and equipment division, Owens-Corning Fiberglas Corporation, has joined Ferro Corporation, Cleveland, Ohio, as ceramic sales manager.

HOTPOINT MILWAUKEE NAMES SWEET, GERDES

It is reported that L. E. Sweet has been named manager of the Milwaukee (Wis.) plant of Hotpoint Company. It was also announced that Paul Gerdes is now plant superintendent at Milwaukee.

PORCELAIN FRONTS FOR 250 SERVICE STATIONS

The growing acceptance of architectural porcelain for use in the construction and remodeling of gasoline and service station building facades is reflected in the announcement by



ING-RICH Trouble Shooters Can Help You Solve Your Problem

Don't laugh it off. We *might* be able, you know, to solve your enameling problems . . . to cut your rejects and re-works. Can you afford not to "listen" . . . if your only obligation is to listen?

OK . . . listen! Ing-Rich Frit is produced as a result of the combination of extensive laboratory research and test . . . and . . . then additionally tested, day in and day out, under actual working conditions in our own large job enameling plant.

Our staff of highly competent ceramic engineers thus have the tremendous advantage of their own

scientific knowledge . . . PLUS . . . day in and day out contact with actual working conditions.

That's why our own enameling reject ratio is extremely low . . . and also why the same thing is true in the plants of our FRIT customers.

Ing-Rich Trouble Shooters . . . engineers who learned the hard way through observing and checking our frits step by step under actual working conditions, are available to you—without obligation. They have *practical* KNOW HOW. Will you let us prove our case, without obligation to you?

INGRAM-RICHARDSON, INC.

OFFICES, LABORATORY AND PLANT

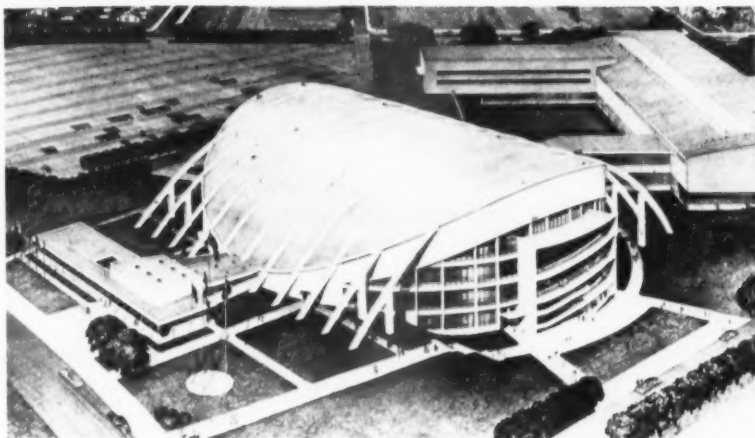
FRANKFORT, INDIANA



Seaporcel Metals, Inc., Long Island City, that since the first of the year it has been awarded contracts to provide porcelain fronts for 250 new and

existing stations in the eastern part of the U.S. Each gas station will utilize approximately 1,000 square feet of porcelain.

ENAMELED STEEL WALL PANELS FOR ALABAMA COLISEUM



The Alabama Livestock Coliseum, in Montgomery, the largest reinforced concrete coliseum in the United States, will have approximately 16,000 square feet of 16-gauge insulated exterior wall panels of porcelain enameled steel. Fabricated by Seaporcel Metals, Inc., Long Island City manufacturer of architectural and marine porcelain enamel products, the panels will be installed on the front and rear facades running along the arched friezes in a wide band

highlighting the glass and face brick walls. The panels, in a gray-green color with a special matte finish known as "Leathercel," will be attached by stainless steel clips through prefabricated holes to metal furring. The Livestock Coliseum, now under construction as the first and major unit in a projected huge State Agricultural Center, will be used for agricultural, industrial-educational and expositional purposes. It is scheduled for completion about August 1, 1953.

McDaniel Refractory Porcelain—has completed a 4000 sq. ft. addition to its Beaver Falls, Pa., plant to house a modern research laboratory. "This new laboratory", said Donald McDaniel, "is a part of the modernization program started in 1952. It will serve more adequately for the required close control of our present line of products, and provide the needed facilities for working out many new problems."



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CORY NAMES RAMBOLT CHIEF METHODS ENGR.

J. W. Alsdorf, president of Cory Corporation, Chicago, has announced the appointment of Charles L. Rambolt as chief methods engineer of the Cory Division of the appliance manufacturing firm.

KOEGLER HEADS NATIONAL LEAD'S DOEHLER-JARVIS DIV.

National Lead Co., New York, named F. J. Koegler a vice president of the company, and general manager of its newly-formed Doehler-Jarvis Division. He will direct National Lead's operations in the die casting business from Toledo, Ohio, headquarters. Products from Doehler-Jarvis' nine plants go in large part to the appliance, automotive and aircraft industries.

The Texas Mining & Smelting Division of National Lead Co. will be operated as a part of the company's metal department.

The newly-acquired Pioneer Alloy Products Division will also be operated as a part of National Lead Company's metal department, according to W. J. Welch, manager of the department. Production of the division consists of corrosion-resisting valves and heat-resisting and acid-resisting castings.

This production rounds out the company's metal department output, with a line of stainless steel valves supplementing its lead valves.

RUSSELL SUCCEEDS TAYLOR AT ALCOA RESEARCH LABS.

Cyril Stead Taylor, nationally prominent physical chemist, and for 23 years chief of the physical chemistry division, Aluminum Research Laboratories, New Kensington, Pa., retired March 1. Appointed to replace Taylor was Dr. Allen S. Russell. Since joining Alcoa in 1940, Dr. Russell has been with the physical chemistry div. of Aluminum Research Laboratories. He served as assistant division chief since 1946.

GENERAL ELECTRIC JOINS STEEL KITCHEN CABINET ASSN.

The Steel Kitchen Cabinet Manufacturers Association has announced that General Electric Co., Appliance Park No. 2, Buechel, Kentucky, is now an Association member.

POTTER TO ROBERTSHAW-FULTON

Robertshaw-Fulton Controls Co. announced the appointment of Man-

ley C. Potter as plant engineer of the Robertshaw Thermostat Division, Youngwood, Pa. He formerly was

NATION'S PORCELAIN ENAMELERS MEET IN LOS ANGELES

Representatives of leading eastern and midwestern member companies of the Porcelain Enamel Institute, and members of the PEI Executive Committee met with West Coast porcelain enameling company representatives in a "Report to the West Coast"

with Westinghouse Electric Corp., where he served as research assistant and equipment engineer.

conference, held in Los Angeles, March 19-20.

Edward Mackasek, PEI managing director, stated that the meeting's prime purpose was to acquaint the western representatives, first hand, with the activities being carried on by the Institute for the benefit of the entire porcelain enameling industry, and to build a closer liaison between the West Coast Institute members and those located in the eastern and midwestern sections of the country.

After a tour of porcelain enamel plants in the Los Angeles area on Thursday, the visiting members met with the western members on Friday in an all-day session. Featured on this program was the latest information on the new Five-Year Market Development Program, latest information on the industry-sponsored Architectural Curtain Wall Program, and a full discussion of activities mutually beneficial to the entire industry.

Following a dinner meeting with the Pacific Coast Enamellers Club, W. A. Barrows, of Barrows Porcelain Enamel Co., and president of the Porcelain Enamel Institute spoke on "The Porcelain Enamel Institute and Its Relation to the Industry," followed by an address by R. A. Dadisman, of Armco Steel Corp., and past PEI president, who discussed "New Horizons of Porcelain Enamel." John Oliver, PEI secretary, also attended the meeting.

SPITZER TO NEW POST AT SHERWIN-WILLIAMS

H. E. Spitzer has been named director of development for Sherwin-Williams Co., according to A. B. Holton, the firm's paint, varnish and lacquer technical director.

In his new post, Spitzer will supervise the company's development laboratories, except the trade sales development section, which is headed by S. F. Carlson, in Cleveland. Spitzer will continue to headquarter in Chicago.

HOT TEA FROM A REFRIGERATOR?

*Your customers saw Arthur Godfrey
and Tony Marvin do it . . .*



**on the Fiberglas
TV-Radio show,
"ARTHUR GODFREY TIME"**

GODFREY:

"Three quarters of an hour ago, Tony heated a pot of water, wrapped it in Fiberglas* Insulation, and put it in the refrigerator."

MARVIN:

"That's quite correct, sir. And now we'll make you some steaming hot tea with it."

GODFREY:

"I hope it's hot. Remember, the inside of that refrigerator is at least 140 degrees colder than that water was."



GODFREY:

"Wow! I'll say it's hot. It's still steaming. You see how Fiberglas Insulation keeps heat where heat belongs and cold where cold belongs. That's why leading manufacturers use it in ranges, refrigerators, water heaters and freezers. Ask your appliance dealer about it."



**Now, more than ever,
A swell feature to have . . .
A swell feature to sell . . .**

OWENS-CORNING FIBERGLAS CORPORATION
Dept. 109-D, Toledo 1, Ohio

*FIBERGLAS is the trade-mark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for products made of or with fibers of glass.



JOHNSON MFG. MAKING FREEZERS

It is reported that Johnson Mfg. Corp., Middletown, Conn., has acquired 65,000 square feet of space, and has begun producing food freezers for frozen food plant operators.

SILEX GETS OPTION ON

CHICAGO ELECTRIC MFG.

Silex Company, Hartford, Conn., is reported to have acquired an option on a majority of the common stock of Chicago Electric Mfg. Co. Directors acted on the recommendation of Stanley M. Ford, new president of Silex, former president of the Chicago firm.

METALWASH MODERNIZES

GENERAL OFFICES

Metalwash Machinery Corp., recently expanded and modernized the



main office building of its Elizabeth, N.J. plant. "This addition to our offices completes the first stage of a broad expansion program begun last year," stated J. L. Pettit, vice president and general manager of the firm which manufactures washing, pickling and drying machinery for industry.

BASSETT, FORMER COWLES

CHEMICAL EXECUTIVE, DIES

Edward S. Bassett, 83, former president and director of Cowles Chemical, died April 1, 1953.

ical Company, died March 9, in Cleveland Heights, Ohio.

LPGA ANNOUNCES SPEAKERS FOR ANNUAL CONVENTION

The Liquefied Petroleum Gas Association has announced the following guest speakers for its annual convention to be held in Chicago, May 3-6: U.S. Senator Alexander Wiley (Wis.); Mort Farr, immediate past president,

National Appliance and Radio-TV Dealers Association; Donald M. Hobart, vice president and director of research, Curtis Publishing Co.; and Cal Tinney, journalist, commentator and humorist of radio and television.

The convention will be held at the Conrad Hilton Hotel, and will also feature a greatly-expanded trade show where 196 exhibit booths will display the latest LP-gas appliances.



IT HAPPENS EVERY DAY...

YOUNGSTOWN KITCHEN CABINETS PASS THE "ADDITION TEST"

No age-yellowed cabinets detract from new additions to kitchens equipped by Mullins Manufacturing Corporation. Old cabinets are as white as new ones . . . stay white for years and years.

The reason? Dependable Arco Finishes . . . built to stay white by Arco formulating know-how . . . proved to stay white by unique Cycle Testing in the famous Arco Research Laboratory.



The Arco Microknife, designed and patented by Arco for extremely accurate measurement of adhesion and film hardness.

One of Arco's Weatherometers, specially modified to produce the most accurate weathering or aging at a highly accelerated rate.

FOR YOUR TOUGHEST FINISHING PROBLEM THERE'S AN ARCO FINISH PROVED BEST BY ARCO CYCLE TESTING

Experienced formulators tailor quality finishes to exacting specifications . . . prove performance by an elaborate series of tests. Arco Cycle Testing evaluates finishes to a degree unequalled in the industry . . . assures a quality finish for your quality product!

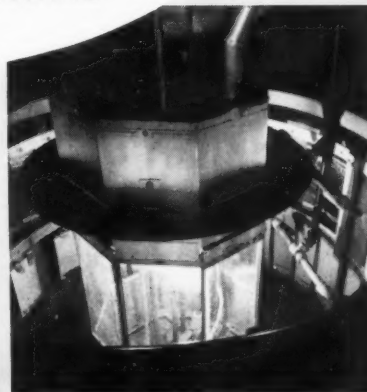


BE SURE with RESEARCHED PROTECTION

TESTED FIRST TO LAST!

THE ARCO COMPANY, 7301 BESSEMER AVENUE • CLEVELAND 27, OHIO

A Subsidiary of American-Marietta Company



U. S. STEEL UPS REYNOLDS

George I. Reynolds, Jr., has been appointed assistant director of market development, U. S. Steel Corp., according to Robert C. Myers, director. Reynolds had been the assistant manager, products section, in the commercial research division.

**KUENN TO MANAGE
FIBERGLAS DAYTON OFFICE**

The air conditioning products division, formerly headed by W. Whitney Kuenn, has been consolidated with the equipment and appliance division of Owens-Corning Fiberglas Corp. of which Richard E. Brown is

sales manager. Kuenn became manager of the Fiberglas Dayton branch office on March 1.

**PENNSALT NAMES CLEM
GENERAL SALES MGR.**

Albert H. Clem has been appointed general sales manager of Pennsylvania Salt Mfg. Co., filling the position left vacant by the recent death of Russell S. Roeller, according to William P. Drake, vice president. Clem had been assistant general sales manager.

Starting in 1933 in the research and development division, he was subsequently a technical sales representative for the metal processing de-

partment, and a product supervisor, assistant sales manager and sales manager of the same department in Philadelphia. He then became assistant to the vice president in charge of sales; sales manager of the industrial chemicals department; and field sales manager in charge of all district sales offices.

CURRIER NAMES JEFFERY G.S.M.

Robert W. Jeffery was appointed general sales manager of Currier Co., Oakland, Cal., according to Farnsworth Currier, president. Jeffery was formerly manager of infra-red sales for Fostoria Pressed Steel Corp., Fostoria, Ohio. Currier is a supplier of industrial product finishing systems.

A NEW "BATTLE OF THE FINISHES" LOOMS

A new battle of the finishes, both organic and ceramic, would seem to be in the making with the announcement by The Glidden Company, before a press conference held recently in Cleveland, of an entirely new product development in industrial finishes for metal.

The new product, Nubelon-S, was announced by A. D. Duncan, Glidden vice president and general manager of the company's paint and varnish division.

According to Duncan, the characteristics of the product are such that

Abrasion resistance of Nubelon-S, modified silicone baking enamel, is shown here. Wear on coating is 30 milligrams per 1000 revolutions.



it is 50% harder than previous standard enamels, and that "it may well replace porcelain and galvanizing on many applications, such as kitchen and laundry appliances, metal furniture, pre-fabricated farm buildings, screening, hospital equipment, etc." The new finish is said to be the result of five years of development work for the purpose of overcoming the natural tendency of organic finishes to lose flexibility with an increased surface hardness. "Its extreme flexibility offers possibilities of finishing metal sheets before forming them into finished products," Duncan stated. It is claimed that the new finish will resist vegetable dyes, mustard stains, fruit and lipstick smudges, to the point of being easily removed with soap and water.

The new coating is a premium-priced material (more expensive than

typical appliance films) and requires a baking temperature of 425° F.

Thomas N. Armel, national industrial sales manager for The Glidden Company, presented comparison data shown in the accompanying table.



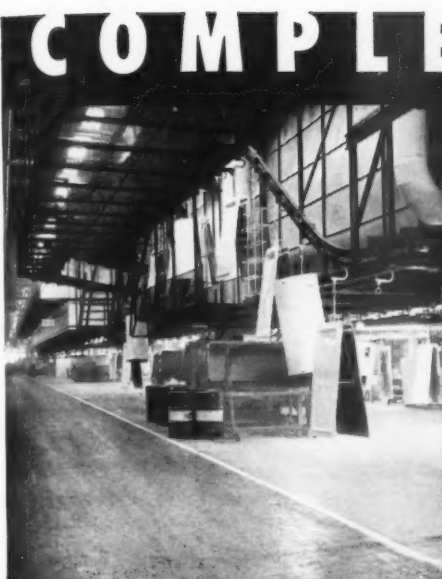
Flexibility of new silicone baking enamel is shown as a coated wire is spiralled about a pencil with no cracking of the finish.

	Resistance Considered Excellent (X)	Nubelon-S	Alkyd- Amine
Hardness (Pencil)	6-7H	X	G
Abrasion (Taber factor)	30	X	F
Flexibility (60 in./lb. impact)	No cracking	X	G +
Salt Spray (inches creepage in 400 hours)	0.03	X	F
Humidity (4000 hours)	No change	X	G
Hot Soap 1% Rinso (@ 160° F.)	700-1000 hours	X	F
Hot Grease Vapors (@ 500° F. for 8 hours)	No change	X	P
Stain (all types household)	" "	X	G
Heat (350° F. 16 hours) — Discoloration	" "	X	F
Gloss	" "	X	G

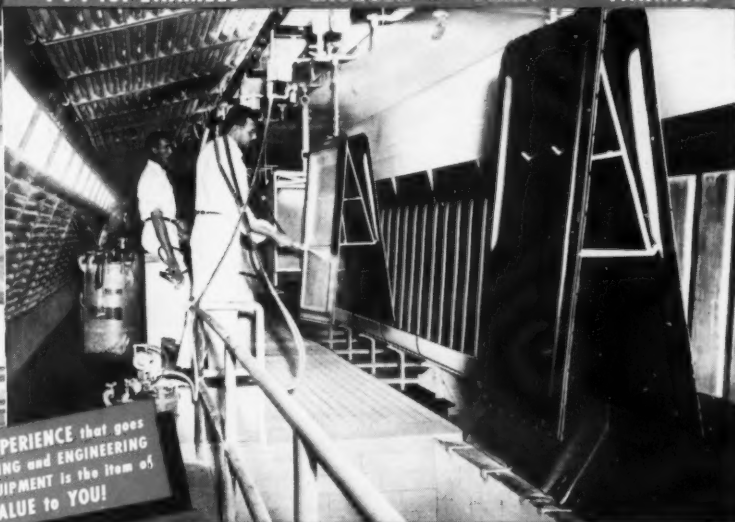
X = excellent, G = good, F = fair, P = poor.

COMPLETE *Finishing* SYSTEMS

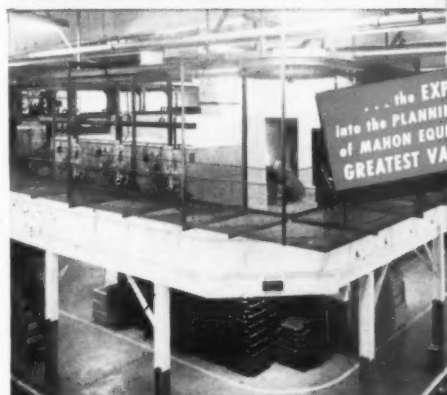
... for ENAMELS • LACQUER • PAINT • VARNISH



General view of Mahon installation showing air supply system overhead in foreground and bottom entrance finish baking ovens overhead in the background.



Interior view of typical Mahon Hydro-Filter Spray Booth. Note "Hydraire" Flood Sheet and "Microfusers" which provide perfect control of air flow in working area of the booth.



Indirect Gas-Fired Heating Units for Mahon Finish Bake Ovens and all Recirculating and Exhaust Fans are also located overhead to save manufacturing floor space.



Gas Burners and part of the Automatic Control Equipment necessary to maintain constant prescribed temperatures in the various stages of a Modern Mahon Finish Baking Oven.

... the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the item of GREATEST VALUE to YOU!

Modern Equipment Pays Dividends in Finer Finish, Lower Cost, and Better Working Conditions!

Production Finishing Equipment is constantly being improved . . . new developments such as the Mahon Fire-Jet solution heating units for cleaning and rust proofing equipment, better control of air flow in the working area of the Mahon Hydro-Filter Spray Booths, improved Flow-Coaters, automatic and conventional Dip Coaters, better automatic control of heat stages in Mahon Finish Baking Ovens, new Vacuum Booths, and many other improvements which are the result of constant research and development carried on by the Mahon Company in search of better methods which result in finer finishes at lower cost. The equipment illustrated here was recently installed in the plant of one of the world's largest home appliance manufacturers . . . it is ultramodern in every respect. If you are contemplating new finishing equipment, you will find Mahon engineers are better qualified to determine your equipment requirements and to plan and produce the most efficient production finishing equipment available today . . . equipment which will prove to be the most economical from a standpoint of maintenance and operating cost. Remember, Mahon has pioneered in this highly specialized field for over thirty years . . . remember, also, that more automobiles and more home appliances are finished in Mahon Finishing Systems than all other types combined. See Sweet's Plant Engineering File for further information, or write for Catalog A-653

THE R. C. MAHON COMPANY

HOME OFFICE and PLANT, Detroit 34, Mich. • WESTERN SALES DIVISION, Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems—including Metal Cleaning and Pickling Equipment, Metal Cleaning and Rust Proofing Equipment, Hydro-Filter Spray Booths, Filtered Air Supply Systems, and Drying and Baking Ovens; Core Ovens, Heat Treating and Quenching Equipment for Aluminum and Magnesium, and other units of Special Production Equipment.

MAHON

NEW PRESIDENT AT USAIRCO

Wesley J. Peoples, former president and chairman of U. S. Radiator Corporation, has been elected president of U. S. Air Conditioning Corp., New York.

WHIRLPOOL PLANT EXPANSION

Work is expected to start about April on an estimated \$400,000 building project to provide more warehouse and shipping space in Whirlpool's Plant 3, St. Joseph, Mich. Built in 1946, Plant 3 was intended to be a warehouse and shipping room, but had been converted for production purposes before completion. A second floor will be built to house the packaging department.

FARQUHARSON TO

DON ASSOCIATES

Word comes from Don Associates, Inc., Hartford, Conn., manufacturers of television bases, that E. L. Farquharson has been named vice presi-

dent and general manager, following his resignation as vice president of home laundry equipment sales at

Universal Major Elec. Appliances Co., Lima, Ohio.

LUX CLOCK LAUNCHES CONSUMER AD CAMPAIGN

The first full-scale national advertising schedule in the company's history will be launched in April by The Lux Clock Manufacturing Co., Waterbury, Conn. Highlighted by the Lux "Minute Minder Man," a newly-created trade character, the ads will emphasize the multiple use of "LUX-TIME" in the home—chiefly as automatic timing devices installed in millions of washers, dryers, toasters, ranges and other appliances.

Lux estimates that fully half the homes in America already employ the company's products in one or

more applications. The campaign will serve to turn this existing "in-the-home" acceptance into tangible selling power for appliances in which



"LUX-TIME" is a sales-building component.

Lux will provide manufacturers with colorful "Minute Minder Man" tags to affix to all Lux-equipped ap-

★ A Motor for your Combination ROTISSERIE and BROILER



• If you manufacture a Rotisserie, Broiler or a Household Range, a motorized Spit provides the new and modern way to cook—here is the motor for you.

Thousands now in use on this type cooking appliance and other products such as vending, coin operated, amusement and advertising displays where motion at slow speeds is desired.

Made in three basic sizes and with output shaft speeds of from 1 to 500 rpm and with torque of from 5 to 500 in. ounces. Write for descriptive information and data sheet.

Motoresearch Company

1600 JUNCTION AVENUE
RACINE, WISCONSIN

Designers and Manufacturers of
SPECIAL INDUCTION MOTORS



Make Your Own ENAMELING DROP HOOKS



Buy WIRE by COIL

HEAT RESISTING ALLOY WIRE

in 35Ni-15Cr

BY COIL OR STRAIGHT LENGTHS

All Size Bars for Drop Hooks and Fixtures
FROM WAREHOUSE STOCK

There's no finer heat resisting alloy
than 35Ni - 15Cr for strength and freedom from scale in enameling operations.

ROLLED ALLOYS, INC.
Heat and Corrosion Resistant Alloy Specialists

4815 BELLEVUE AVENUE DETROIT 7 MICHIGAN • TEL. WALNUT 1-4462

pliances, so that dealers may feature the timer in selling to customers.

The ad schedule will include six leading women's and "home" magazines, totaling 60 million impressions. TV will also be used in selected markets.

INDUSTRY OUTPUT UP AGAIN

February marked the seventh straight month of increased production by U.S. industry. The Federal Reserve Board reported January production 137% above the 1935-39 average, and February showed a further small rise, mostly in heavy consumer items. The board said production of durable goods climbed in January and February, while production of non-durable goods recovered slightly from a decline in December.

FOOTE MINERAL APPTS.

James E. Castle has joined Foote Mineral Co. as manager of the Lithium Mining & Milling Div., at Kings Mountain, N.C. He was formerly with St. Joseph Lead Company as assistant plant manager of the Balmat Mill.

Ernest A. Remesch joined Foote Mineral as superintendent of the new lithium processing plant at Sunbright, Va. He was plant engineer and, more recently, assistant plant manager of Melson Fertilizer Co., Georgetown, Del.

Robert J. Longenecker joined Foote Mineral as a junior ceramist in the research and development department. He worked for The Norton Company, Worcester, Mass., until joining Foote. He will assist John Donahey, ceramic division head, in the development of new ceramic products and applications using lithium.

REYNOLDS METALS ANNOUNCES PAINT MARKET ASSIGNMENTS

Reynolds Metals Company, Louisville, Ky., has announced the appointment of two men to head up the paint market division of the firm's sales organization. Douglas McKellar was named manager, paint market sales, and Edward F. Reilly, assistant manager, of the paint sales division.

finish APRIL • 1953

BIGGEST NEWS TODAY!

33 1/3% SAVINGS IN FINISHING COSTS!



WITH
SPEE-FLO
PRESSUREMATIC
Circul-Flo
CIRCULATING
HOT-SPRAY HEATERS

REDUCED OVERSPRAY
WITH MARKED SAVINGS
IN SPRAY MATERIAL

Improved Build
and Holdout!
SPEEDS APPLICATION
Maintenance-Free
Operation!

NO COILS TO CLOG!
NO GEARS TO WEAR!

A SUPERIOR FINISH AT REDUCED COST!

Now at last . . . all the advantages of hot spray, plus a trouble-free circulating system that provides instant hot spray where it is needed. Units available for both constant and intermittent use. Investigate the advantages of Spee-Flo Hot Spray Heaters for both fixed and mobile applications.



Mounted for spray-booth or conveyor operations.



On wheels for use in wide-area applications.

PORTABLE AND FIXED
MODELS PRICED
FROM \$89.50
TO \$299.50

720 POLK AVE.
HOUSTON 2, TEXAS

MAIL COUPON FOR FULL INFORMATION ON HOW HOT-SPRAY CAN BENEFIT YOU

THE SPEE-FLO CO., 720 Polk Ave., Houston 2, Texas
Gentlemen:

Please send me literature and information on the time and material saving Hot Spray method. In order to facilitate your recommendations please find the following brief information on our finishing system.

Type of product being finished
Application is Conveyorized ☐ Turntable ☐ Mobile ☐ Other ☐

Average volume of material per gun per hour.....
Please have a representative call.

PLEASE ATTACH TO YOUR LETTERHEAD WITH YOUR NAME AND TITLE

IPSEN NAMED TO INDUSTRIAL FURNACE MFRS. ASSN. POST

Carl L. Ipsen has retired from General Electric Co. to become executive vice president of the Industrial Furnace Manufacturers Association, in Washington, D. C. He had been with G-E for 39 years, and acted as chief consultant on heating equipment during the past year.

Outlook for enamel products

→ from Page 37

terior walls and partitions of porcelain enameled products are easy to keep clean and sanitary. New hos-

pital construction is likewise expected to be a greater factor in the future, so that ever larger numbers of people subscribing to hospitalization services can be accommodated. In short, a substantial increase in activity in commercial building is visualized. With the softening of controls, 1953 could well show a 30% to 40% increase over 1952 in this type of construction.

As highway construction opens up new communities the momentum towards suburban shopping centers increases. I would be tempted to say the sky is the limit — but it is more practical to say that the money is the limit. The trend is there, the

need is there, it is basically a question of how much money can be invested in these activities. Again, the common denominator is the general business conditions that will prevail.

About home construction

Now for the home construction field — here the prospects are not quite as optimistic. The building trade has gone a long way in capturing the available dollar for investment in new homes. The desire for more and better homes will always be there, but we must temper these aspirations, because of the high cost of construction, back to the point where they represent real demand.

We believe that a great deal of the demand during 1953 will revert to normal annual growth and replacement. Based on this assumption, we can expect about a 5% to 10% decline from 1952.

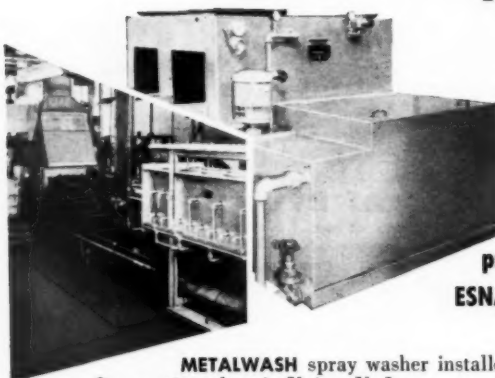
This is not really a pessimistic prediction, and once again the long range prospects are quite bright. However, we can expect a lower volume of home construction during the middle fifties. New household formations, which are the backbone of the new home market, are likely to decline sharply during this period as the "depression babies" of the early and middle thirties reach marriageable age. The formation of families should bounce back with tremendous strength in the later fifties, as the high birthrates starting in the early forties yield its crop for a new generation — a generation that will, in effect, represent another plate at today's family table and create a more dynamic future for not only new homes, but also many other products and services which our economy will grow to meet.

We have covered here only large principal consuming industries — appliances, commercial buildings, and home construction — and we know that this has left many things unsaid. But by endeavoring to measure the prospects of the principal outlets for porcelain enameled products, it is believed that we have arrived at the general situation. All forecasts can only be approximations, but on the whole the prospects seem bright.

productive

WASHER

installation



for cleaning
prior to tempering of
ESNA* self-locking nuts

METALWASH spray washer installed at Elastic Stop Nut Corporation plant in Union, N. J.

View at left shows a portion of ESNA's Heat Treating Department. Self-locking nuts are conveyed through two American Gas Reciprocating Furnaces into AGF conveyORIZED quench tanks. Mesh conveyors carry the work into **METALWASH** hot spray washer where quenching oil is removed prior to tempering.

METALWASH machine conveys the work directly into continuous tempering unit (not visible in photo).

*ESNA is the registered trade mark of Elastic Stop Nut Corp. of America.

METALWASH Finishing Engineer, a new quarterly publication, is available on request to engineers and executives to whom cleaning and finishing are operations of interest. Please write us on your company letterhead if you are interested in receiving the **METALWASH** Finishing Engineer regularly.



metalwash

MACHINERY CORPORATION

919 North Avenue • Elizabeth 4, N. J.

representatives in principal cities

PURNELL RESIGNS AS HEAD

OF Y. S. & T.

Frank Purnell, for more than 23 years executive officer of Youngstown Sheet & Tube Co., plans to retire late in April, after 51 years in the steel industry. Purnell had been chairman of the board for three years. He joined Youngstown in 1902, as a hall boy.

VAN DER KLOET TO ADDRESS

CENTRAL DISTRICT ENAMELERS

At the May 1 meeting of the Central District Enamelers Club, to be held at the Allerton Hotel, Cleveland, Ohio, Mark E. van der Kloet, vice president in charge of construction, Erie Enameling Co., will discuss "The Future of Porcelain Enamel in the Building Industry." The Club will also hold an election of officers.

L. I. SHAW ESTABLISHES

CONSULTING OFFICES

L. I. Shaw has established his own offices as engineering consultant at Santa Monica, Cal. He was development engineer for Western Electric Co., Chicago, for 21 years, where he directed a large variety of engineering developments. Since leaving Western Electric in 1945, Shaw has worked closely with various aircraft companies. On four assignments, he was in charge of high temperature, ceramic body and coating developments for rockets, missiles and engines, including jet engines, and directed materials developments. At Hughes Aircraft Co., since early 1951, he was primarily concerned with the development of special ceramic bodies.

Shaw will continue to act as consultant on special ceramics, bodies and coatings, and is taking up again special materials development and work on industrial hygiene engineering.

50,000 DEALERS ENTER NEMA

HOUSEWARES GIFT CAMPAIGN

Participation of 50,000 dealers, almost 50% more than in 1953, is expected for the 1953 Electric Housewares Gift Campaign, it was announced by the Electric Housewares

finish **APRIL • 1953**

Section of the National Electrical Manufacturers Association.

WATER CONDITIONING GROUP

HOLDS ANNUAL MEETING

The Water Conditioning Foundation, composed of leading manufacturers of water softening equipment for home, industrial and institutional use, held its annual convention in Chicago, March 4-6.

T. W. Bruner, president of Bruner Corp., Chicago, was elected president,

and A. K. Rheem, Jr., manager of Rheem Manufacturing Co.'s tank division, Chicago, was elected vice president. John C. Hosford is executive secretary and treasurer.

The following were elected to membership on the executive committee: H. F. Werhane, president of Culligan, Inc., Northbrook, Ill.; J. P. Lawlor, president of General Filter Co., Ames, Iowa; C. A. Spaulding, Jr., vice president and general manager, Refinite Corp., Omaha.

painting?

See what Ransburg
can do for you

Our electrostatic coating processes may provide you
with increased production and higher quality finish at
a fraction of your present painting cost . . .



If your production volume justifies conveyORIZED painting,
we invite your inquiry to permit evaluation of the savings
which can be yours with one of these processes. Write or
call for information.

Electrostatic Painting Processes

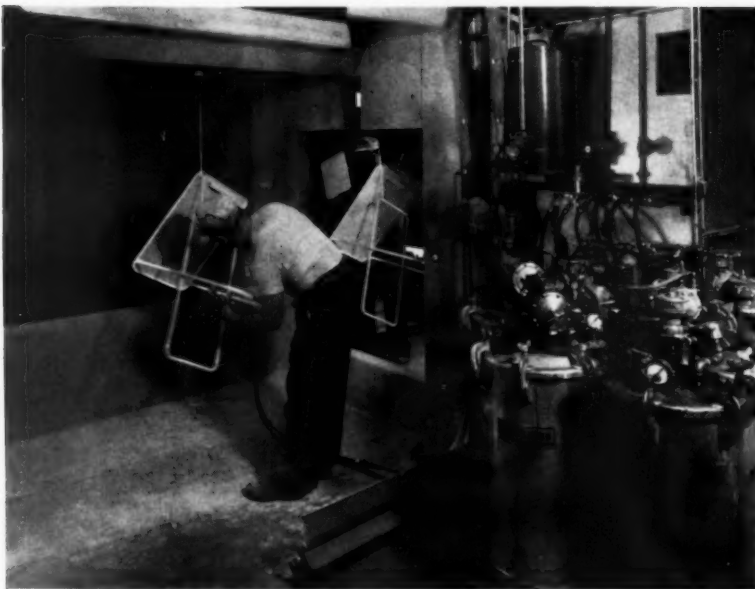
RANSBURG ELECTRO-COATING CORP.

Indianapolis 7, Indiana

RANSBURG

Automatic finishing for metal furniture

(Continued from Page 48)



Above: Touch-up booth following electrostatic finish coat application at the plant of The Troy Sunshade Company, Troy, Ohio.

Below: Inspection station following finish coat application and preceding baking. At this point, variation in application can be corrected prior to baking. Very minor defects in coverage are corrected with small touch-up gun.



accounting for big savings in both labor and material. Formerly, our various painting operations required 17 people — 8 spray men and 6 helpers, with 3 men for maintenance. Now, the single conveyor can be handled by only 10 people — 2 loaders, 2 spray men, 2 touch-up men and 4 helpers. We need to operate only 2 shifts, whereas formerly we sometimes operated 3 shifts for the same amount of work.

Although comparative cost figures on materials are not available, we know we are saving more than a dollar per gallon on the reduced material used in the electrostatic unit. We average 250 pieces per hour — all sizes — with usage of only 4 to 5 gallons of paint. The finished work is more uniform, too — rejects used to be a serious problem, now rejects and rework run less than 1%.

Easy color changes

— from 2 to 6 times daily

One of the greatest advantages of the electrostatic unit in our operation is the ease of quick color change. We use 12 different colors on our whole line of products, changing from 2 to 6 times daily to meet production demand.

The present continuous and centralized system, with the electrostatic spray process and more rigid inspection control, is accounting for increased production with more uniform — and higher quality — painting at less cost. The economies effected by our modernization program have proved most worthwhile.

Designing a new automatic electric appliance

→ from Page 35

is rolled brass, chrome plated. Minimum radii were held due to rolling specifications. To enclose the area under the lamp shade, a stamped aluminum panel was introduced. The decor on this panel is only skin deep and is obtained by one of the oldest methods of decorating a metal surface — engine striping. Today, this method goes under a more fancy name — demasceening. This decoration adds luster to the surface, con-



what's going on here?

Titanox titanium dioxide, for one thing. It's going on more products, for home, industry, business and personal use, than ever before. As a part of the finish, it's giving new life to colors, making whites whiter, adding hiding power and durability.

For the organic finishing field—paints, enamels and lacquers—Titanox has developed rutile titanium dioxide pigments that provide new levels of brightness, opacity and fade-chalk resistance. These pigments are TITANOX-RA, TITANOX-RA-50 and TITANOX-RA-NC.

For the porcelain enamel field, non-pigmentary Titanox titanium dioxide has been developed. Specially processed for ceramic use, TITANOX-TG or, for blue-whites TITANOX-TG-400, assure color uniformity, afford greater production speed and economy . . . superior titania porcelain enamels.

Our Technical Service Department is willing any time to help manufacturers of finishes to make the best use of

Titanox titanium dioxide pigments. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.


9892

® **TITANOX**

brightest name in the finish

TITANIUM PIGMENT CORPORATION

Subsidiary of NATIONAL LEAD COMPANY



ceals scratches and blemishes, and is easy to keep clean as the surface is virtually flat and free from indentations. Attractive molded white plastic nameplate, with stamped letters in color, lends sufficient contrast and correlates the overall design into a clean composition.

Hardware—Clean, simple handles.

TECHNICAL PROGRAM FOR ACS ENAMEL DIVISION SESSIONS

THE 55th annual meeting of the American Ceramic Society will be held at the Statler Hotel, New York City, April 26-30.

More than 180 technical papers have been scheduled for presentation in the sessions of the eight divisions of the Society. These were arranged by the Division program chairman which are as follows:

Basic science, H. F. McMurdie, National Bureau of Standards; *Design*, F. J. Vontury, Vontury, Inc.; *Enamel*, W. A. Deringer, A. O. Smith Corp.; *Glass*, W. H. Manning, Calumite Co.; *Materials and equipment*, R. E. Rhodes, Jr., Donald Hagar Co.; *Refractories*, L. R. McCreight, Knolls

Drawn in steel, polished and chrome plated by mass production methods at low cost. It represents the best we have accomplished in range handles. It has been the mode of late to have handles look anything but handles, and we believe the homemaker will welcome this refreshing innovation.

Atomic Power Laboratory; *Structural clay products*, E. C. Clemens, Cannelton Sewer Pipe Co.; *White wares*, J. H. Koenig, Rutgers University.

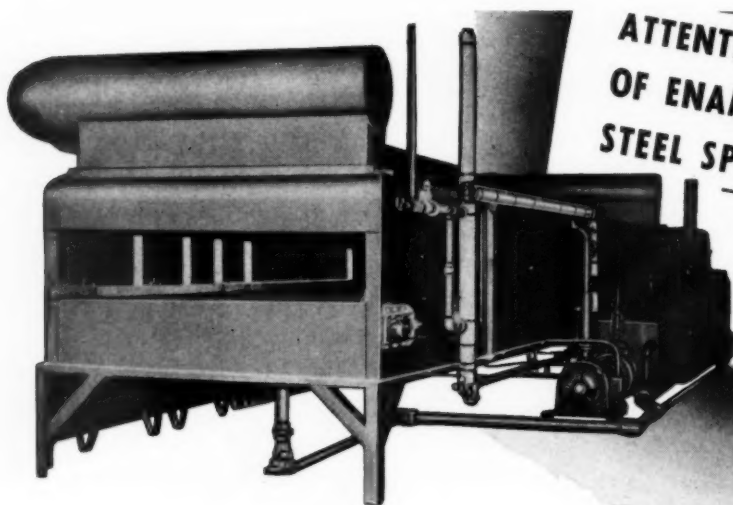
Enamel division program

Seventeen papers will be presented in the five sessions of the Enamel Division.

The resistance to abrasion of some dry-process cast iron enamels was investigated by the use of the newly developed PEI "Test for Abrasion Resistance by Weight Loss," and will be discussed by W. C. Spangenberg, of Metal & Thermit Corp., Carteret, N. J. E. Sohn, Eagle-Picher

Co., Joplin, Mo., will present experimental results on leaded enamel for dry-process cast iron sanitaryware. The resistance of sheet metal and cast iron enamels to corrosion by alkaline solutions will be discussed in a paper by H. B. Kirkpatrick, J. C. Richmond and N. B. Balint, of the National Bureau of Standards, Washington, D. C. Another paper on chemical durability will be presented by O. C. Linhart and A. Honkanen, of Chicago Vitreous Enamel Product Co., Cicero, Ill.

Several papers on adherence studies will be given. F. R. Porter, of Inland Steel Co., East Chicago, Ind., will review various factors which affect surface activity and present some recent results of his investigations. A. G. Eubanks, J. C. Richmond and D. G. Moore, of National Bureau of Standards, Washington, D. C., have collaborated on a study of oxidation behavior of steel during normal firing cycles and will present data on their investigation. Another investigation conducted by the National



**ATTENTION MANUFACTURERS
OF ENAMELWARE, STAINLESS
STEEL SPECIALTIES AND APPLIANCES**
**AUTOMATIC
PASSIVATOR (PICKLER)**

METALWASH—4 stage all stainless steel, continuous conveyor, tunnel type—self contained—passivating machine consisting of rinsing station; passivating station (pickling); hot water rinse and hot blast drying zone—complete with pumps, adjustable speed drive for stainless steel roller chain, conveyor, tanks, etc. Opening 16 inches high by 72 inches wide.

Machine was used approximately one year, is in excellent condition—complete with all piping and ventilation equipment.

Ideal for passivating and pickling stainless steel and mild steel products continuously. Production figures on request. For sale at approximately 1/3 acquisition cost.

Contact Arnold Landesberg
Luria Brothers & Co., Inc.
Industrial Equipment Division
600 Lincoln-Liberty Building
Philadelphia 7, Penna.
RIppenhouse 6-7455

For Price and Details

Bureau of Standards on factors affecting the adherence of ceramic coatings to alloys will be described by J. W. Pitts and D. G. Moore. A radio-isotope study of the nickel dip and an investigation of the effects of the nickel dip on the adherence of ground coats to steel will be presented by J. C. Richmond, H. B. Kirkpatrick, D. G. Moore, J. W. Pitts and W. N. Harrison, of the National Bureau of Standards.

A new technique to the study of bubble structure of porcelain enamels will be described by C. G. Bergeron, of A. O. Smith Corp., Milwaukee, Wis. J. E. Cox and A. I. Andrews, of University of Illinois, Urbana, Ill., will present a paper entitled, "A Study of Hairlining."

W. J. Plankenhorn, of University of Illinois, will discuss the affect of ceramic coatings on the fatigue strength of metals, and J. D. Walton, of Georgia Institute of Technology, Atlanta, Ga., will present a paper on the relationship of strains between enamel and iron to the physical properties of each.

Factors affecting bond and appearance of white titania enamel directly on steel will be discussed by A. L. Friedberg, of University of Illinois.

An investigation conducted at Pennsylvania State College, State College, Pa., on the effect of carbon in the enameling of steel, by P. K. Chu, J. K. Magor and H. M. Davis, will be described and data presented. An apparatus for the extraction and analysis of gases will also be described.

B. W. King, of Battelle Memorial Institute, Columbus, Ohio, will report on an investigation on the system, $\text{Na}_2\text{O-NaF-B}_2\text{O}_3\text{-H}_2\text{O}$. The properties of such salts are shown to be related to the handling characteristics of enamel slip.

The development and standardization of tests for the enamel industry by the Porcelain Enamel Institute will be described by G. H. Spencer-Strong, of Pemco Corporation, Baltimore, Md. This paper reviews the history of PEI standard test methods, their present status, and the current program of the Institute on the development of new methods.

finish APRIL • 1953

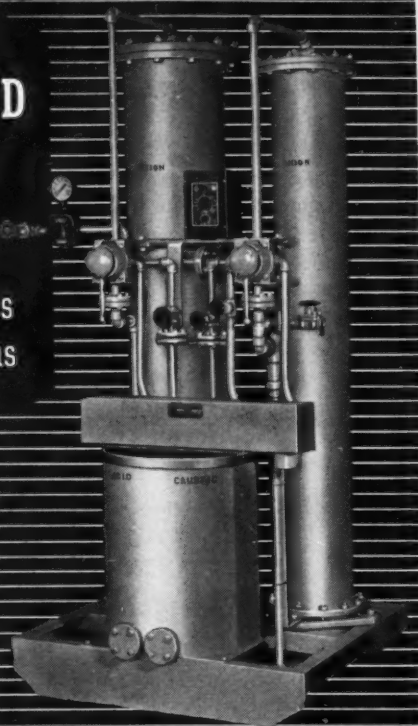
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DEMINERALIZERS
RUBBER LININGS
CORROSION TEST CABINETS
HEAT EXCHANGERS

Outdoor phone booths

→ from Page 51

lower portion ceramic over 18 gauge iron. The base metal was selected after rigid tests had proved it highly satisfactory. The panels are porcelain inside and out, in forest green. The ceiling and roof are white porcelain, the white ceiling to provide best light reflection on the inside, the white roof for heat reflection to keep the booth cool.

The aluminum frame had to be weather-proofed, of course. This was done by anodizing. The company

is at present experimenting with a spray plastic and studying the results under the most trying atmospheric conditions it can find. Two of its experimental booths situated on the edge of the Pacific Ocean fully exposed to fog and salt spray are holding up well so far.

Two of the most interesting features of the new booth are its ventilation and its ease of assembly and disassembly.

"Air conditioned" booths

Persons who have emerged from

the conventional type booth wringing wet (and who has not?) will cheer what has been done to make the booth airy and odor-free.

"In the first place," remarks Claude E. Housman, who designed the booth, "metal and porcelain do not absorb odors. There is no lingering stale smoke." Then, the design and construction makes the booth automatically air-conditioned. At the bottom of each of the wall panels are nine medium-sized louvers which allow air to enter from the ground line. At the top where the roof fastens on to the walls, below the eaves, is a two-inch space on all the four sides. When the door is closed, heat on the roof creates an up-draft, in the manner of a chimney, making for a continuous change of air. When the door is opened the effect ceases. "People soon get on to it," Housman smiles.

A flat "package" for shipment

The knock-down feature makes the booth easily transportable, easy to put up or take down anywhere. Four screws taken out of each post and four out of the roof disassemble it completely. A great advantage of this is, of course, that if any one part becomes damaged, it is easier and more economical to replace. The company is perfecting an even more advanced design, where four screws in the roof will lock the whole booth into a unit. It will be possible to ship this "package" anywhere flat, for assembly in the field in thirty minutes by one man.

Advantages of the present design booth besides those mentioned are, of course, appearance, ease of maintenance, and durability.

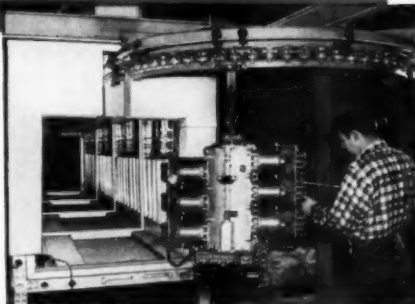
Popular as the outdoor booths have proved and eager though the public apparently was for more and more of them, as tests revealed, there were some locations where the clumsier old-style outdoor booth was not acceptable to business firms and civic authorities. The semi-transparent, sanitary booth of new design overcame the objections to placement of the outdoor public telephone booths in spots like town plazas, outside of post offices, banks, and in downtown street-side locations where planning

"Superior Finishes, Less Drying Time with JENSEN PAN-L-HEAT!"

AIRCOOLED MOTORS, INC. TELLS HOW IT
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"SUPREME QUALITY is the primary consideration in every operation connected with the manufacture of aircraft engines," says this leading manufacturer. "Jensen Pan-L-Heat has given it to us. Our engines are now coming out with superior quality finishes . . . in addition, drying time has been substantially reduced."

Solving problems of all types—like meeting unusually high standards—is a Jensen specialty. Your particular heating problem will get prompt attention from Jensen engineers. Representatives are located in all principal cities.



This 28-ft., 100-KW Pan-L-Heat oven is used by Aircooled Motors, Inc. to bake grey enamel on air-cooled aircraft engines. Conveyor was also supplied by Jensen—operates at a speed of one foot per minute. Engines, weighing over 350 lbs. each, are mounted on four-foot centers.

• Get All the Facts—Write for Jensen Pan-L-Heat Brochure (on your letterhead, please).

JENSEN PAN-L-HEAT:

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- Uses electric heat more effectively at low cost.
- Improves quality and uniformity of production.
- Gives superior results with shorter heating cycles—at lower energy consumption.

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Ovens

**ADVANCE
HEATING DIV.**

9331 Freeland Ave., Detroit 28, Michigan

commissioners have exacting standards. Many of them are beginning to appear in these locations throughout northern and southern California, identified with porcelain signs in dark blue on white outlined with red tubing. Experiments are being made, too, with floodlighting of the booths at night.

"Doodling" made difficult

A big problem with the ordinary telephone booth is to keep it clean and sanitary. This problem practically disappears with the new booth. Here, officials of the company state, maintenance, if handled right, is practically nil. Even the tendency of telephoners to "doodle" or otherwise leave their mark on clean surfaces has been foiled. Wiping off the surfaces with a light trace of oil or furniture polish makes writing on them difficult, if not impossible.

As to durability, initial skepticism on this score has given place to confidence. So far, company officials observe, the ceramic materials, and the plastic-finished aluminum have given "very good performance". Housman says, "so sturdy are the enameled panels, I have no hesitation, in demonstrating to doubters, in going up to one of the booths and letting go with a swift kick." In testing out the material initially, foot-square sections of porcelain-enameled paneling of the construction to be used were given some very rough usage. Housman says, "I personally slammed these down on hard surfaces as many as sixty or seventy times. With all that, only the edges eventually began to show signs of abuse." The secret of the durability, he points out, is to apply the ceramic finish over a sufficiently sturdy enameled stock.

Eager users of the outdoor booths include some very substantial persons. The company's surveys reveal that the most frequent patrons are truck drivers, doctors keeping in touch with their patients, hospital, or office; anxious parents checking up with baby sitters; women shopping; husbands late for dinner; persons enroute between two points who need or wish to call family, friends,

business associates or customers.

In fact, Pacific Telephone rubs it eyes and announces that the outdoor booths are from 25 to 30 per cent more popular than its indoor booths . . . and, with more than 12,000 already in use, that saturation is far from being reached.

As pioneers in 24-hour outdoor public telephone service (along with the Bell Telephone Company of Canada who were first in the field north of the border), Pacific Telephone is now preparing to share its know-how, booth designs, and general experi-

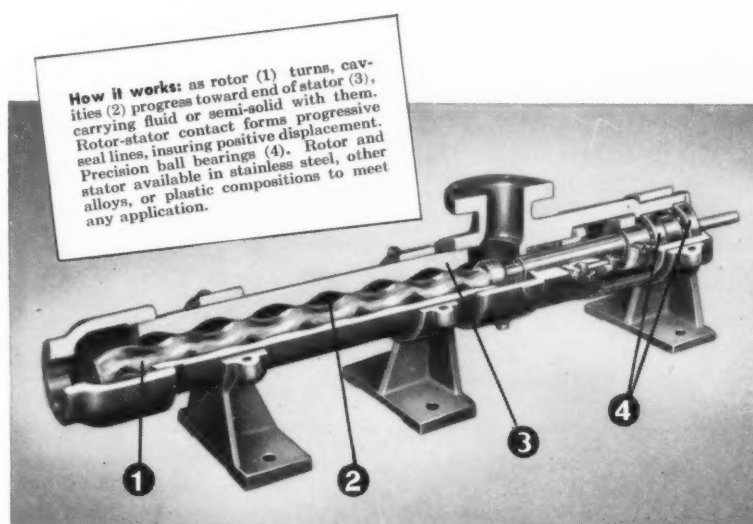
ence with telephone companies in other states which are asking for guidance in setting up similar outdoor programs.

Torture chambers

→ from Page 22

cated in the inner combustion chambers without metal attrition.

Because the inner and outer combustion chambers must fit together in perfect alignment, close control of the dimensions of these components is a vital requirement of their fabri-



How it works: as rotor (1) turns, cavities (2) progress toward end of stator (3), carrying fluid or semi-solid with them. Rotor-stator contact forms progressive seal lines, insuring positive displacement. Rotor and stator available in stainless steel, other alloys, or plastic compositions to meet any application.

If your pump requirements are a little different . . .

The entirely different MOYNO® Pump may be exactly what you need!

FACTS ABOUT THE MOYNO

the world's simplest pump

- **Positive Displacement**—available to pull up to 29 inches of vacuum while discharging under pressure. Big Moynos deliver up to 250 g.p.m. at 600 p.s.i.
- **Gentle**—no foaming; will not break up semi-solids.
- **Reversible**—pumps just as well either way.
- **Trouble-Free**—self priming; won't cavitate or vapor-lock. Just one moving part—no valves to stick, no pistons to gum up. Built for tough service, easy to maintain.
- **Versatile**—handles anything that goes through pipe.

If your materials are viscous, semi-solid, hard to move . . . if they're abrasive or tend to disintegrate . . . find out why Moynos handle jobs where other pumps fail!

The Moyno Pump represents a completely new and different concept of pump design. The cutaway above—and facts at left—show you why it's a pump you can install and forget.

And, chances are this versatile pump can solve your problem. Moynos pump clay for a leading pottery maker. They're being used for pumping caustics . . . white water in paper mills . . . even for pumping potato salad!

GET THIS BULLETIN

Get more facts today! Write for Bulletin 30-PH; it will tell you more about the versatile Moyno Pump.

ROBBINS & MYERS, INC.

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cation. When the inner chamber is inserted into the outer shell, the maximum allowable clearance between the two, at the flange ring, is a miniscule fraction of an inch. Rigid demands for concentricity and roundness must be met. First, the faces of the front and rear flanges of the outer chamber must be flat and parallel within minute tolerances. Then, while meeting these requirements, the flanges must be concentric with the inner chamber.

"Floating suspension" for inside chambers

Provision for thermal expansion of the inner chambers is made by suspending them from the fuel nozzle

entry and allowing them to join the transition liners, at the rear, by means of a "slip fit" connection. This arrangement gives them a "floating" suspension inside of the outer chambers and permits them to increase in length and diameter without resistance. Outer combustion chambers are fitted with a stainless steel bellows at the rear end, which provides them with a flexible joint for thermal expansion and to facilitate assembly.

Two of the inner chambers in each J-47 jet engine are equipped with spark plugs for initial ignition. Through a series of inter-connecting tubes, called "cross-over" tubes, the

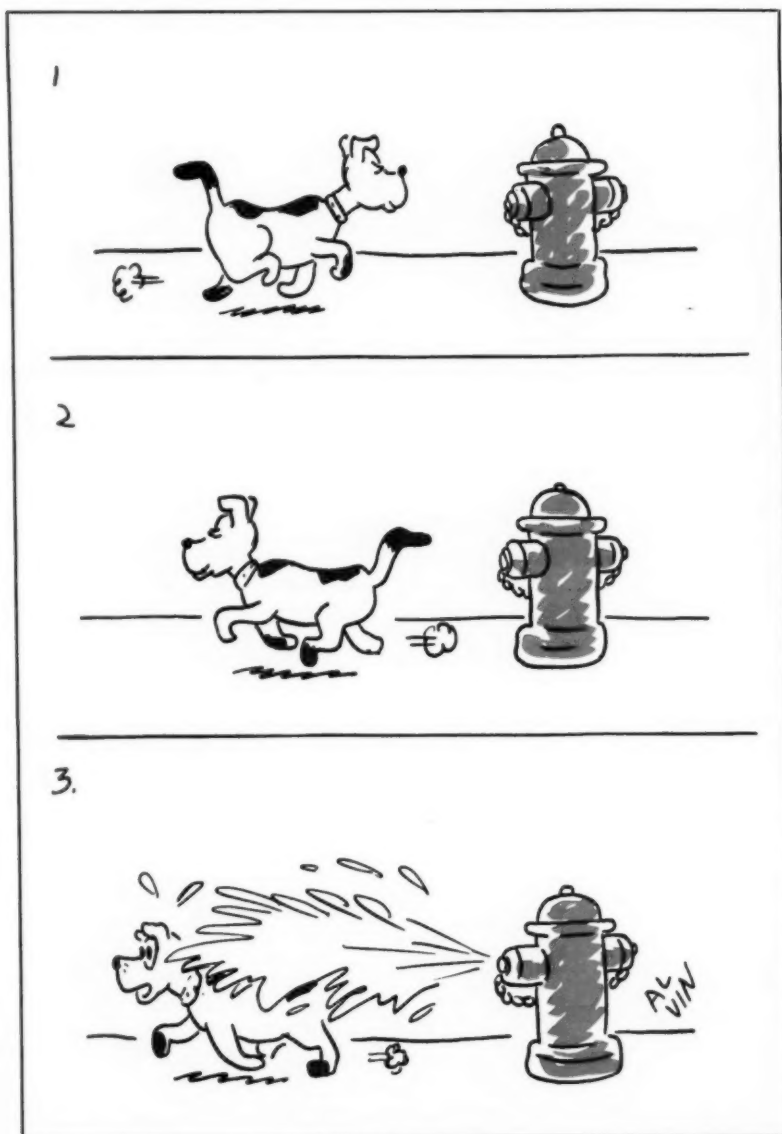
adjoining chambers are quickly ignited, much like the pilot light ignites burners on a gas range. The cross-over tube ports also carry a high precision requirement which specifies that they must be positioned within a fraction of true location in all chambers.

The dramatic functions of the combustion chamber have overshadowed the less-known transition liners and little popular attention has been accorded them. These parts are irregularly-shaped ducts which receive the searing exhaust from the inner chambers and direct it to the nozzles and buckets of the turbine section. Their front cross-sectional opening is circular to mate with the inner combustion chambers. At the rear, they are more or less rectangular-shaped in cross-section to steer the fast-flowing gases into a turbine wheel arc.

In many ways, the transition liners are the most critical sheet metal part of the modern turbojet—even more marginal than the combustion chambers. In addition to the withering temperatures of the blasting gases, they are submitted to pressure pulsations in the gas stream flowing through them. This requires that they be fabricated with highest quality control as well as precision. Even small scratches or blemishes, which would be harmless in other components, could well develop into stress fractures under the severe temperature and pulsating pressures peculiar to transition liner service life.

The advent of the jet engine has greatly emphasized the importance of precision sheet metal and machined member fabrication for high temperature applications. This is because the turbojet employs so much more of this type of structure than its conventional piston engine predecessor.

The ever-growing dependability of the turbo-jet is attesting to the success with which manufacturers are meeting the new, higher specifications for this modern power plant. Now, almost universally accepted for military aircraft, the turbojet is headed for a big future in the commercial operations.





April • 1953

safe transit

FROM ASSEMBLY LINE TO FINAL CUSTOMER

Acme Steel Strapping Insures S.A. *(Safe Arrival)*

and builds good will for Admiral Corporation



QUALITY CONTROL of Admiral television receivers extends beyond the assembly lines and into the shipping department where Acme Steel strapping is used to insure safe arrival of TV sets in the hands of distributors.

Admiral Corporation, Chicago, "world's largest manufacturer of television receivers," changed its method of shipping TV sets three years ago and 1) eliminated previously heavy damage in transit losses; 2) gained a tremendous amount of good will with its distributor organization.

Up until 1950, Admiral TV sets were placed in shipping cartons and loaded solidly into freight cars. Frequently the sensitive electronic tubes and complex wiring systems in the sets were damaged en route to distributors.

Then Admiral called in Acme Steel shipping

specialists to analyze the problem and help cut this loss. W. J. Curtis, traffic manager, tells what happened:

"Since we started using Acme Steel Strapping at our Chicago plant as a shipping safeguard three years ago, we have not had a single TV set damaged in transit which was attributable to improper loading or strapping failure."

Acme Steel Strapping can insure Safe Arrival for your products. Write for details to Acme Steel Products Division, Dept. F43, ACME STEEL COMPANY, 2807 Archer Avenue, Chicago 8, Ill.

ACME STEEL CO.
CHICAGO

**ACME
STEEL**

STRAP IT . . . STITCH IT . . . SHIP IT . . . SAFELY!

safe transit

A monthly trade publication section devoted to improved packaging and shipping and materials handling practices in the home appliance and metal products manufacturing field.

Plant experience information for all executives and plant men interested in the problem of packaging and shipping improvement and loss prevention.

Complete information on the National Safe Transit pre-shipment testing program for packaged finished products, and detailed progress reports of divisions and sub-committees of the National Safe Transit Committee.

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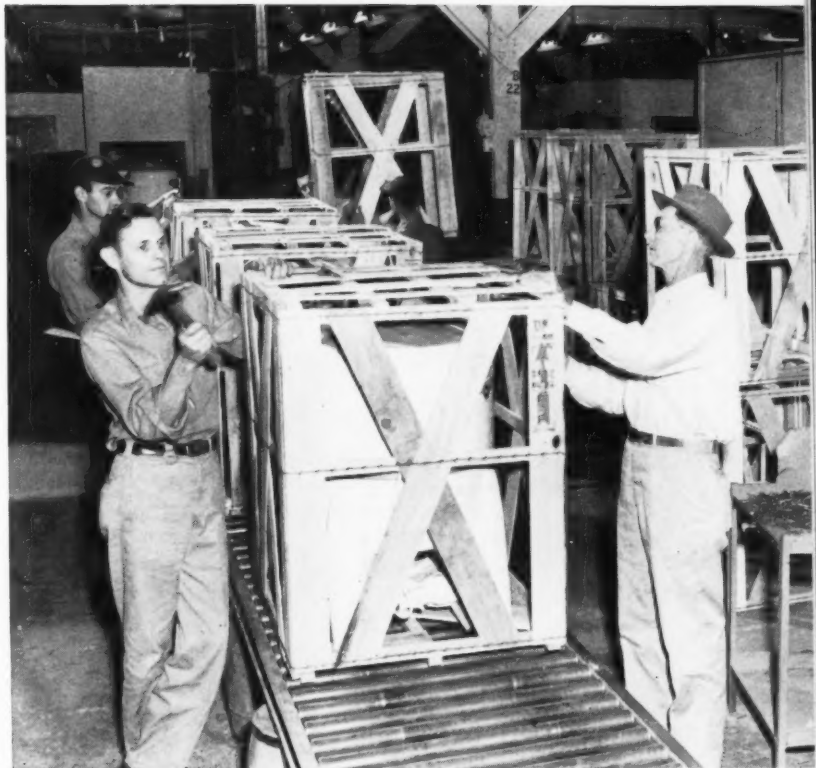
CERTIFICATION FOR RHEEM,

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NATIONAL PACKAGING EXPOSITION

IN CHICAGO, APRIL 20-23ST-17

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Whirlpool washing machines—being crated for shipment from Clyde Porcelain Steel Division plant, in Clyde, Ohio. In preparing a washer unit for shipment, the tub lid is covered with a square sheet of protective cushioning material, and the sheet corners taped to the underside of the lid. The packaged lid is then placed in position and secured for safe shipment by taping it to the tub. The wringer is packaged separately and placed between the washer legs on "high" models. Wringers for "low" models are shipped separately. Fork lift trucks transport the crated machines either to the loading dock for shipment, or to temporary storage in new buildings. (See Page 27 for a photo story on production operations at Clyde Porcelain Steel.)



Protective packaging related to retail sales

plumbing and heating contractors realize and appreciate competitive advantage gained at retail level by proper packaging

by *Kenwood Hanson*

MANAGER, WATERFILM BOILER DIVISION, L. O. KOVEN & BROTHER, INC.,
JERSEY CITY, NEW JERSEY

THE close relationship that exists between protective packaging at the factory and retail sales often is not given the proper credit due it.

However, our company, which has been in business for over 72 years, credits a pronounced increase in sales to a change in protective shipping containers. The crates we now use permit 794-pound domestic unit heater boilers to be skidded through 30-inch doorways, without damage to the boilers or to the customer's property, for uncrating and installation.

This is one of the important features that helped William G. Joralemon, our traffic manager, win second

prize in the wirebound box and crate division of the 1952 Protective Packaging and Materials Handling Competition sponsored by the Society of Industrial Packaging and Materials Handling Engineers.

The prize-winning crate was constructed with built-in pallet skids on both the bottom and one side so that it can be handled either perpendicularly or horizontally by power truck, or slid in either position down stairways and through basement doors without first being uncrated.

With our newly-designed crates, a 794-pound domestic unit heater boiler measures only 59" x 45" x 28", and

has a gross weight of 872 pounds so that shipping container tare weight is 78 pounds, or less than 9 per cent of shipping weight. A 596-pound unit heater boiler has a total shipping weight of 660 pounds, so that tare weight, including the wirebound crate, is 64 pounds, or less than 10 per cent of the gross.

Contractors like crating methods

Plumbing and heating contractors have been quick to realize and appreciate the competitive advantage gained at the retail level by the new package, which permits them to deliver completely crated units directly into home basements without jeopardizing the units themselves, or their customers' stairways and doorways. Uncrating is done at the point of installation without the need of special tools.

The contractors' appreciation is reflected by the decisive boost in sales credited to proper protective packaging.

The conversion to the use of the new crates likewise has effected notable economies and increased efficiency at the factory.

Integrating protective packaging with assembly

The conversion early in 1952 from making our own crates has permitted



ST-4

At start of assembly line, the shell of a 596-pound domestic unit heater boiler is lowered upon specially-engineered crate base so the three stubby feet fit snugly in pre-bored holes in the base that keeps unit from shifting during shipment or handling. Note pallet skid construction of crate base, which rests upon boards for smoother travel over conveyor.

APRIL • 1953 finish



Merging of assembling into packaging is shown here. On left is a unit completely assembled. On right is an identical unit only man-seconds after being assembled. It is covered with heavy paper for protection against dust and dirt, and the top of the shipping crate has been placed in position with the hot water outlet of the unit protruding through a pre-bored hole.

toned accessories and fittings inside the crate, then putting and nailing the crate top in position.

**Factory-built crates saved
over 62% in man-hours**

Only three man-minutes are charged against crating either unit, compared to the eight man-minutes when we made our own crates, a savings in man-time of 62½ per cent. Over-all packing costs have been cut from \$11.22 and \$8.01 to \$10.75 and \$7.45 for the larger and smaller unit, respectively.

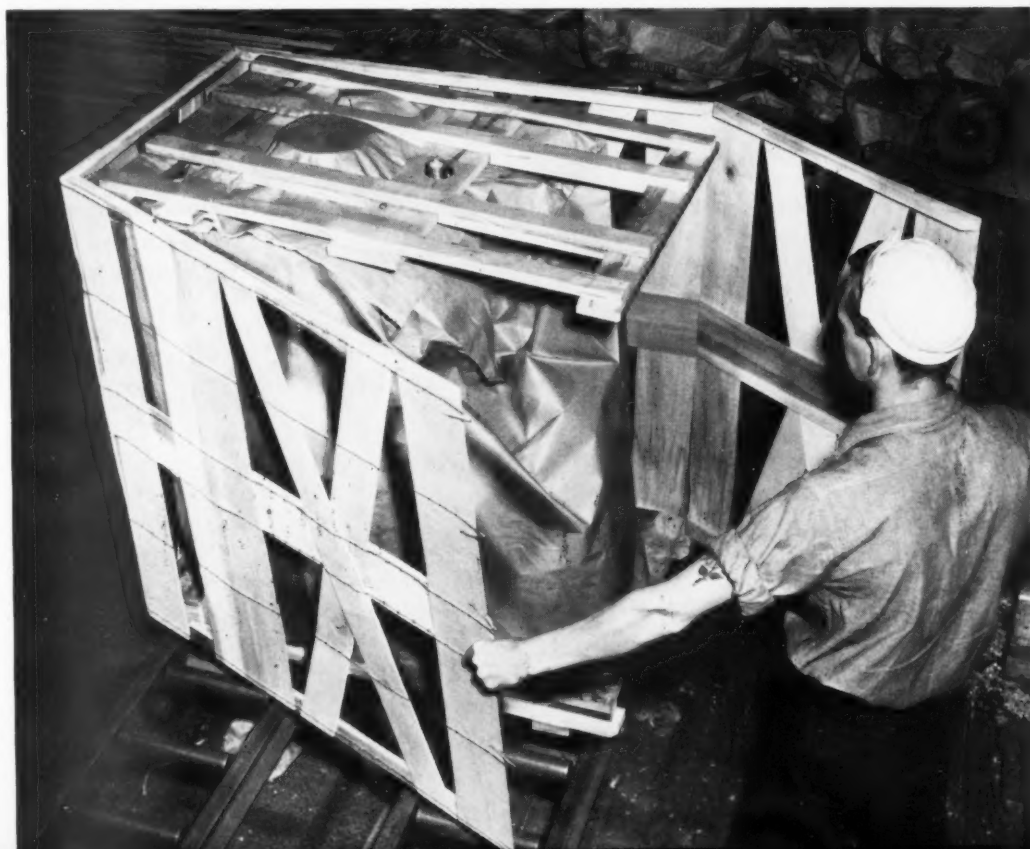
These important economies, plus lower freight charges from lower shipping weights, plus the convenience and safety of delivering fully crated units to the point of installation, have reflected themselves in Koven sales records.

protective packaging for shipment to be integrated with assembly, so that units are lifted from the assembly line completely crated.


Packing actually starts at the head of the assembly line when a unit is lowered upon the specially-engineered

base of its crate. After going through the assembly line, packing is completed as an integrated process by laying heavy protective paper over the unit, placing a one-piece wrap-around "mat" in position to form the four sides of the crate, putting car-

"Wrapping up" a domestic unit heater boiler in the Jersey City factory of L. O. Koven & Brother, Inc. A one-piece wirebound wrap-around "mat" that comprises the four sides of the shipping container is being placed in position so that its end cleats will engage the top and base of the crate to form a shock-absorbing package. Only three man-minutes are charged to packing-for-shipment.



The first industry-wide AT



THE first national, industry-wide Safe Transit Conference drew an attendance of over 300 key men from all over the United States and Canada. In attendance were representatives of all segments of the Safe Transit picture — manufacturers and their association, carriers and their associations, container manufacturers and their associations, technical groups, laboratories, military and government representatives, and the complete coordinating group that has been responsible for the development and operation of the National Safe Transit program during its almost five years of operation.

A cordial welcome to the first conference was extended by W. A. Barrows, president, Barrows Porcelain Enamel Co., Cincinnati, Ohio, and president of the sponsoring association, the Porcelain Enamel Institute. Mr. Barrows traced the history of NST and outlined its scope.

The entire meeting was capably handled by Ralph F. Bisbee, Westinghouse Electric Corporation, and general chairman of the National Safe Transit Committee. Typical of Bisbee's "get things done" attitude was the handling of the morning session which, after starting 15 minutes late, ended up on time in spite of the fact that 15 different speakers were heard.

A 30-minute color-sound movie including NST test procedures, and information on the research behind these procedures, was then introduced by Dana Chase, editor and publisher of *finish* Magazine, in whose offices the original plan for a "packaging and shipping committee" (now National Safe Transit Committee) was evolved in early 1948. The movie, which was designed for educational use by all those interested in better packaging and shipping techniques,

vidATIONAL SAFE TRANSIT conference

Chicago meeting draws over 300 men from all parts of United States and Canada

showed how simplified pre-shipment testing can be used effectively in plant or in laboratory.

Manufacturers' case histories

Paul Bush, acting chairman of the Technical Planning Division, introduced representatives of five leading certified manufacturers for the presentation of 5-minute case histories. These included were: C. R. Strayer, Globe American Corp.; G. L. Dobson, Tappan Stove Co.; W. W. Higgins, A. O. Smith Corp.; E. J. Thomas, A. J. Lindemann & Hoverson Co.; and E. E. Spriggs, Frigidaire Division, General Motors Corp.

Representatives of the "distribution picture" held the attention of the audience as they gave their impression of the importance of pre-shipment testing to those who must handle and sell the packaged products. The distributors' opinions were represented by O. T. Sands, Sears, Roebuck and Co., and W. H. Murray, Georgia Power Company.

The 2-way street

Since its inception, the National

Safe Transit pre-shipment plan has been considered by the Coordinating Committee as a "2-way street," involving both manufacturer-shippers and carriers. R. P. Carr, Frigidaire, recently appointed chairman of the Carrier Coordinating Division, proved his committee was on its toes by presenting a clear picture of what the carriers are doing on their side of the 2-way street, through representatives of the Associations of the four chief methods of transport. Those presenting the carrier information included: Frank B. Gibson, Association of American Railroads; John M. Miller, American Trucking Associations, Inc.; A. J. Orfait, Railway Express Agency, and James G. Erwin, Air Cargo, Inc.

Sales and consumer relations get the limelight

The two chief speakers for the Conference represented the Conference theme of "Safe Transit — a Sales Tool For You."

Luncheon speaker was E. Carl Sorby, vice president of Geo. D. Roper Corporation, and a leading sales figure in the gas appliance industry. Mr. Sorby has built a national reputation as one of today's most colorful sales speakers and has traveled thousands of miles to present his forceful sales messages to interested audiences. His subject was "Safe Transit as a Sales Tool for the Manufacturer." It is doubtful if anyone in attendance at the meeting could attempt to divorce proper packaging and shipping for safe transport from sales and customer relations after hearing Mr. Sorby's forceful talk.

Featured speaker to open the afternoon session was Joe Meek, president of Illinois Federation of Retail Associations, an organization including

a total of more than 40,000 merchants of all types and sizes. Mr. Meek is proud of the fact that he has lobbied for retailing since 1935. He believes that looking out for the retailer's interest has also aided the cause of the consumer-taxpayer whose interest in fair prices, higher living standards, spendable income and the glorious freedom to select and choose are identical with those of the retailer. This speaker urged the NST Committee to find means of carrying the story of NST to every retailer of certified finished products in the country.

Straightening out the kinks

Although the pre-shipment testing program, sponsored as a voluntary, cooperative plan by the National Safe Transit Committee, is basically simple in operation, as in all programs such as this, there are always questions of interpretation and points needing clarification. In view of this, the afternoon session, following Mr. Meek's address, was devoted to a Question and Answer period. Able

to Page ST-16 →

JOE MECK, GUEST SPEAKER



finish APRIL • 1953

E. CARL SORBY, GUEST SPEAKER



ST-7

WHAT THEY SAID!

brief excerpts from the comments of leading speakers at the NST conference

MANUFACTURERS

"We are testing two crated ranges daily which are taken off our assembly line at random. We feel we have provided a method of controlling our product and packing. . . ."

Clark Strayer,
Globe American Corporation

"We have learned to lean on the National Safe Transit Program to the extent that we would not attempt to get along without the testing procedures during the design and production of our appliances."

E. J. Thomas,
A. J. Lindemann & Hoverson Co.

"This is a voluntary program. Those of us who investigated and are now using it are reaping the benefits, not only from a cost standpoint but also through better satisfied customers. . . . It represents a minimum investment and will pay handsome returns over a period of a great many years."

E. E. Spriggs,
Frigidaire Div., Gen. Motors Corp.

"By reducing the amount of damaged merchandise, we have helped to eliminate a source of irritation and dissatisfaction on the part of both the dealer and the housewife-customer. . . ."

G. L. Dobson,
Tappan Stove Company

"We perform Safe Transit tests in our plant, testing from one to four heaters from each production run. . . . Our reported shipping damage is now only 1/10 of 1%. . . ."

W. W. Higgins,
A. O. Smith Corporation

DISTRIBUTORS

"No longer can the manufacturer hold his place in the highly competitive market of today who holds to the old ideas that his responsibility ends when he builds a good product. It is also his responsibility to do everything possible to see that it is delivered to the buyer in good condition. . . ."

"Any carrier who does not see the value of the National Safe Transit Program, and does not try to improve its facilities and educate its freight handlers, can expect to lose business. . . ."

W. H. Murray,
Georgia Power Company

"We make no bones about the fact that in many instances we have taken liberty of recommending to manufacturing sources that they follow the standards laid down by this (NST) Committee. I assure you that in so doing we have no friends — and never an enemy — because the accomplishments speak for themselves."

"85% of our major appliance suppliers now test in accordance with the proposed NST procedure. . . ."

O. T. Sands,
Sears, Roebuck and Co.

CARRIERS

"Prior to the adoption by this (typical) firm, a total of 1,015 claims had been presented for damages against 4908 shipments forwarded. . . The second year (after NST) only 52 claims were presented against their traffic. These figures represent a decrease of 95% in claim presentations. . . ."

"As a member of the carrier group, we sincerely hope that the Safe Transit plan will be adopted by many other industries. . . ."

A. J. Orfai,
Railway Express Agency

"When we get right down to the final analysis of the movement overall, we find that air transportation must give an equal amount of attention to pre-shipment testing along with any other forms of traffic movement. . . . The airfreight industry has a very real picture of the vital need for continued efforts directed toward careful transportation. We realize that the number of lost man hours resulting from damaged merchandise can easily be so astronomical as to affect business economics as a whole."

J. G. Erwin,
Air Cargo, Inc.

"Prevention efforts are being increased constantly, not only in improved equipment and facilities, but also in educational programs for all employees. In addition to this, prevention officers are making a regular call on shippers to discuss their mutual problem—loss and damage prevention."

"Copies of films have been purchased by many railroads. . . (Subjects: Prevention of Rough Handling of Cars — Training film on proper handling of LCL freight.) Touring 'Instruction cars' are used to . . . present the loss and damage prevention story to employees. . . ."

Frank B. Gibson,
Association of American Railroads

NOTE

More case history information presented at the Industry-Wide Safe Transit Conference will appear in forthcoming issues.

"Prevention of damage . . . depends almost entirely upon our freight handlers and loaders. This requires a constant campaign to educate the employees in proper handling procedures and constant supervision to assure that the employee will perform his duties according to the instructions which he has been given. (Educational plan includes meeting of employees, sound-slide films and movies, poster services, etc.)"

"In future months we plan to publicize once more to our industry the names of the manufacturers that have adopted the National Safe Transit pre-shipment test."

John M. Miller,
American Trucking Associations, Inc.

How Frigidaire uses pre-shipment testing

by *E. E. Spriggs* • FRIGIDAIRE DIVISION, GENERAL MOTORS CORP., DAYTON, OHIO

IT IS a real privilege and pleasure to enthusiastically endorse the National Safe Transit program. For a great many years Frigidaire has had its own program of pre-shipment testing.

Our objective in crating and packing, in warehousing, in loading and blocking railroad cars is to get our Frigidaire products to the ultimate consumer in as near perfect condition as possible. This starts in the design of our product and in the design and testing of our shipping crates and packing materials.

We were happy to join with others in industry, with the railroads, the truck lines, the express companies,

and other carriers in the program of the National Safe Transit Committee.

The shocks of normal warehousing and shipping

Many of us are familiar with the various types of shock to be considered in normal warehousing and shipping routines. I would like to identify them as follows:

1. Impact
2. Vibration
3. Drop
4. Handling or Rocking
5. Stacking

These are the five basic types of shock which we have to contend with, and the basic test of the National Safe

Transit program gives us the facts about our product and about our crating in the pre-shipment testing.

Probably the most destructive blows the majority of shipped objects are subjected to are of the impact type. With the aid of an impact recorder, you can establish the severity of the impact that your product is subject to, and then with the conbur type testing machine you can simulate these severe blows and determine exactly what happens to your product while in transit or in your warehouse.

Don't underestimate vibration

Many of us have underestimated

the damage that vibration does to both our product and our crating, and with the vibration test as recommended in the National Safe Transit program you can easily see in your own plant what effect vibration has on your product.

The other tests that have been established, such as the drop test, handling or rocking, and stacking, are all important to each and every manufacturer.

We have a crating engineer and a testing laboratory in our engineering department. We follow the National Safe Transit testing program and use their tests to analyze the normal types of shock as they affect our products. All of our finished products and crates are tested, as well as the cartons and crates that are used in packing our service parts.

We at Frigidaire feel that our pre-

shipment testing program is money well invested, and that it pays us a handsome return. We know that it helps us to meet our objective in getting our fine Frigidaire products into the hands of the ultimate consumer in as near perfect condition as possible.

We like the National Safe Transit program because it includes everyone involved in the routine of getting the product from the manufacturer to the ultimate customer. We know that the carriers recognize their responsibility in this program and know that they are working on the problem with the same sincere interest as we in the manufacturing industry.

This means that we can expect a continued improvement in the method of handling and shipping properly packed products and that more of our manufactured items will get into the

hands of the customer in perfect condition and we will all have less damage to contend with.

A suggestion for non-certified manufacturers

If you do not use the National Safe Transit program, we urge that you investigate it and give it a sincere appraisal because we know that it represents only a minimum investment and will pay handsome returns over a period of a great many years.

This is a voluntary program. Those of us who investigated and now use it are reaping the benefits, not only from a cost standpoint but also through better satisfied customers.

May I suggest that you investigate and see if it will not be to your advantage to try the National Safe Transit pre-shipment testing program.

How Safe Transit has aided Tappan Stove

by G. L. Dobson • CHIEF ENGINEER, THE TAPPAN STOVE COMPANY, MANSFIELD, OHIO

AT THE Tappan Stove Company, we think that the National Safe Transit program has greatly aided in the delivery of a high quality range which has contributed to better factory-dealer-customer relations.

Just what are factory-dealer-customer relations? From the viewpoint of shipping problems, we feel that the first step toward good relations is to put yourself in the other fellow's shoes and understand his viewpoint. For example, most intelligent housewives realize that their new range will bake efficiently even if there is a chip off the oven liner, or a slight dent in a bodyside. Nevertheless, since she has paid for a new range, she wants it to be as perfect as it is humanly possible for it to be. Her pride of ownership demands that. She may even understand that the range was in perfect condition when it left the factory. Yet, she still protests, "Shipping dam-

age isn't my problem, it's yours." And, she is right.

Now, let us look at the same situation from the dealer's viewpoint. He understands why the customer will not accept damaged merchandise. But he asks, "Why should I be stuck with it? Why should I have to devote extra time and space and working capital to damaged merchandise?" Then, when he realizes that he and his customers are also indirectly paying for damage claims by way of high shipping rates, his good will toward the product is further jeopardized.

That dangerous 2-month lag

Keeping both the customer's and the dealer's viewpoints in mind, our company has always given care and consideration to proper crating, packing and product design. However, we realized that there was a lag of as

much as two months between production and the receipt of shipping complaints. Before adopting the National Safe Transit program there was always an element of uncertainty about shipping performance because of the delay of information. What if our trial shipments to various cities had not been subjected to average shipping hazards? What if a change in our product would result in some unexpected shipping damage? We wouldn't know the answers for two months. That hazard of two months of bad shipping damage was enough in itself to sell management on the need for equipment to pre-test our crated ranges.

Since adopting the test procedure as outlined in the Safe Transit program, we have a method of making trial shipments *inside our own plant*. We don't have to wait for reports from dealers, and we are on hand to

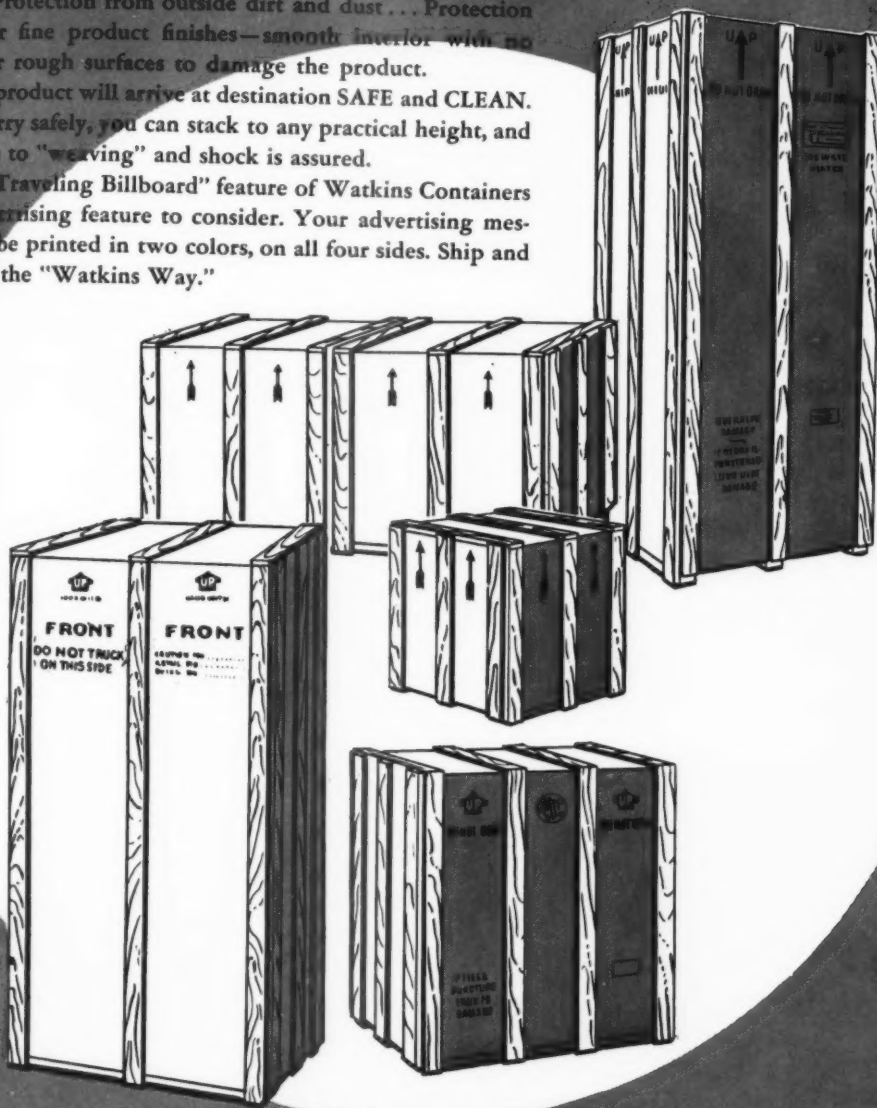
WATKINS

Containers give
COMPLETE protection

With Watkins Containers you get complete product protection: Protection from outside dirt and dust... Protection inside for fine product finishes—smooth interior with no staples or rough surfaces to damage the product.

Your product will arrive at destination **SAFE** and **CLEAN**. It will carry safely, you can stack to any practical height, and resistance to "weaving" and shock is assured.

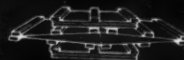
The "Traveling Billboard" feature of Watkins Containers is an advertising feature to consider. Your advertising message can be printed in two colors, on all four sides. Ship and advertise the "Watkins Way."



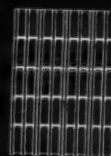
ASSEMBLY is speeded up with this easy-to-handle container. The assembly crews are all for packing the Watkins Way.



HANDLING shocks in the factory, in transit, and during delivery are resisted by the wood cleats, glued tube mat construction.



STORING problems are reduced to a minimum because of the 3-section design which provides for flat, close nesting.



STACKING is easy and safe, due to the supporting strength (minimum 4 tons on most containers) that is engineered into the Watkins design.

THERE IS A WATKINS CONTAINER MADE NEAR YOU
It will pay you to check with one of these companies now

Cornell Paperboard Products Co. 1514 E. Thomas Ave., Milwaukee, Wis.
Cazier Container Corp. 446 East 131st Street, Cleveland, Ohio
Crato-Rite Mfg. Corp., Division of Pacific Ports Ind. Inc. 10901 Russell Street, Oakland, California
Dura-Crates, Inc. 940 East Michigan Street, Indianapolis, Indiana
General Box Co. 1825 Miner St., Des Plaines, Illinois, and
16th and Maple Sts., Louisville, Kentucky
Homb & Martin Mfg. Co. Watseka, Illinois

Illinois Box & Crate Co. 811 Center Street, Plainfield, Illinois
Kieckhefer Box & Lumber Co. 1715 West Canal Street, Milwaukee, Wis.
Lone Container Corp. 10212 Denton Road, Dallas, Texas
Lewisburg Container Co. 243 Singer Street, Lewisburg, Ohio
Livingston Wood Manufacturing, Ltd. Tillsonburg, Ontario, Canada
Lowe Mfg., Inc. 608 South Commerce Street, Wichita, Kansas
Utility Crato Corporation 1985 E. 16th Street, Los Angeles 21, California

—an inquiry to any of these companies will get prompt attention—



The · WATKINS CONTAINER · Manufacturers

see for ourselves the condition of the range after shipment. If correction is needed, our dealers will not be inconvenienced with a period of faulty crating or product. We believe that this trial shipment in our plant also reduces the number of minor annoyances which the dealers never reported, but, nevertheless, were a strain on our dealer relations. Now we can catch these minor items in our own plant and reports them to the department affected for correction. This method points the way to constantly improving our product.

Proof for product designers and engineers

The Safe Transit tests were of much help in confirming our product design and selecting the type of crate best suited to our needs. The Engineering Department believed that another type of crate would be better in many ways. Through the Safe Transit tests on the packaged product, we were able to *prove* that this style was far superior to the type we had

been using. That proof was further substantiated when our carload shipping complaints dropped almost to zero as soon as we started using the new crate.

I am not able to give a complete before-and-after comparison of our shipping damage because many of our claims are made by our dealers. However, a substantial percentage of our ranges now go to our own warehouses and we do place the claims on these shipments.

Our shipping department reports that in 1952 our claims were less than one-half of one percent of the total value of the ranges shipped to the warehouses. These shipments were carload and truckload shipments. Our shipping damage for LCL and LTL runs higher because of the handling at transfer points. In fact, at one time there were numerous reports of a particular kind of damage which appeared to be caused by extremely careless handling of LCL and LTL shipments. By using our im-

pact tester we were able to duplicate this type of damage to a range in our own plant. This made it possible for us to determine how to change our crates to withstand such impact. Almost immediately, after changing our crates, the complaints dropped off.

The major benefits

In closing, I will summarize a few of the major benefits our company has received through the adoption of the Safe Transit Program.

This program has set up the methods and tests by which we can keep shipping damage a *minor* problem.

Through the use of this program, we have obtained a much better packaged product, and by "trial shipments" within our plant, we are able to make corrections to product or container and provide for any unusual shipping requirements that may arise in the future.

By reducing the amount of damaged merchandise, we have helped to eliminate a source of irritation and dissatisfaction on the part of both the dealer and housewife-customer. The resultant good will we believe is as important a benefit of the Safe Transit program as is the dollar and cents saving.



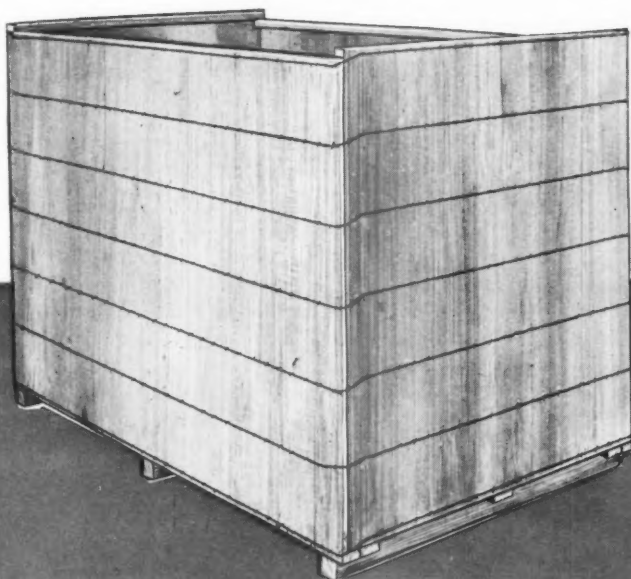
"THE BOSS DECIDED BARBWIRE BINDINGS WOULD INSURE GENTLE HANDLING."

EXHIBIT SPACE SOLD OUT FOR MATERIALS HANDLING SHOW IN PHILADELPHIA

All available display space at the National Materials Handling Exposition, to be held at Convention Hall, Philadelphia, May 18-22, has been assigned, it was announced by Clapp & Poliak, Inc., exposition management. A total of 284 companies will exhibit.

Acting as sponsor for the show will be the Material Handling Institute. A concurrent "workshop" conference will be conducted by the American Material Handling Society. Conference topics include: "Handling in Process", "Warehousing and Shipping", "Packaging for Improved Handling", "Bulk Handling", and "Requirement for Organized Study and Analysis."

HOW WOULD YOU MOVE THIS PILE OF PARTS?



it's as costly as this ▶



OR...

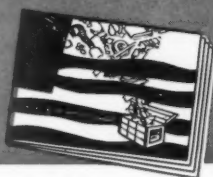
as efficient as this ▶



Generalift **PALLET BOXES**

Better check today on this versatile, popular container. The Generalift Pallet Box and fork lift truck is a combination that will substantially reduce your materials handling costs! Picture at right shows how many manufacturers are also using Generalift Pallet Boxes for the more economical storage of parts and materials.

Write for your free copy of "The General Box." It illustrates and describes how manufacturers are cutting container costs.



AMERICA'S FINEST INDUSTRIAL PACKAGING LABORATORY

It is here where more efficient containers are born. We will be glad to study your problem and design a container that best meets your specific needs. Write for complete details.

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DISTRICT OFFICES AND FACTORIES: Cincinnati, Denville, N. J., Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, Sheboygan, Winchendon. General Box Company of Mississippi, Meridian, Miss. Continental Box Company, Inc., Houston, Dallas

ENGINEERED SHIPPING CONTAINERS FOR EVERY SHIPPING NEED

- Wirebound Crates and Boxes
- Generalift Pallet Boxes
- Generalite Beverage Cases
- Cleated Corrugated and Watkins-Type Boxes
- All-Bound Boxes
- Corrugated Boxes

DON L. QUINN DIES

Don L. Quinn, head of The Don L. Quinn Company, a commercial testing laboratory certified by the National Safe Transit Committee, died February 27 at the age of 77. He was active in work of ASTM, TAPPI, and Forest Products Laboratory.

NST CERTIFICATION FOR RHEEM, FEDDERS-QUIGAN, UNIVERSAL

The National Safe Transit Committee has announced the certifications of Rheem Manufacturing Co., Chicago, Ill.; Fedders-Quigan Corp., Maspeth, Long Island; and Universal Major Elec. Appliances, Inc., Baltimore, Md. A total of 122 manufacturers are now participating in the voluntary National Safe Transit Program.

SEITH HEADS SALES FOR TWO CORNELL PAPERBOARD DIVISIONS

Cornell Paperboard Products Co., Milwaukee, has announced that T. L. Seith is assuming the duties of sales



A lifetime membership—in the Society of Industrial Packaging and Materials Handling Engineers was presented to A. L. Green, a former SIPMHE director, by the national president, Stanley Price (left), at a recent meeting of the Society's Illinois Division. Green, widely known as "Mr. Claim Prevention", recently retired as a special representative of the Association of American Railroads.

manager of the cleated fibre container division in addition to his present duties as sales manager of the corrugated and solid fibre container divi-

sion. The appointment followed the resignation of O. D. Lloyd as sales manager of the cleated fibre container division.

the grip of an **iron fist**



in a soft **velvet glove**



cush-on-strap by Sackner

A patented Steel Strapping faced with soft, fluffy cellulose padding. CUSH-ON-STRAP is prescored to desired lengths and ready for immediate use. Ideal for packing all types of appliances and other finished metal products.



ST-14

NEW SIPMHE BOSTON CHAPTER ELECTS OFFICERS

The recently organized Boston chapter of the Society of Industrial Packaging and Materials Handling Engineers, the 15th chapter in the nationwide SIPMHE organization, formally installed its first set of officers and directors March 3.

Officers of the new chapter include: president, Francis Shaughnessy, Boston Ordnance District; vice president, John J. Reynolds, Jr., Allied Container Corp.; secretary, Vincent McCann, Atlantic Excelsior Corp.; and treasurer, Max Hill, Boston Ordnance District.

Besides the officers, chapter directors are Edward Gardestone, Providence Washington Insurance Co.; R. I. Mullins, Robert Gair Co.; Frank Kimball, Fellows & Sons, Inc.; and Al F. Jordan, Atlas Plywood Corporation.

Organization of a strong chapter in Boston to serve the New England area is considered by SIPMHE to be especially significant at this time in view of the forthcoming 8th annual Industrial Packaging and Materials Handling Exposition and its concurrent competition and technical short course to be held next October in Mechanics Hall, in Boston.

The Boston chapter installed its officers only five weeks after the newly-formed Washington, D. C. chapter installed its first group of officers and directors. Leslie C. Heller, Navy Department, Office of Naval Materiel, is president of the Washington chapter.

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**CHICAGO
MILL
helps
CROSLEY
deliver
safely**



Wirebound,
Nailed or Hinge Corner
Cleated Plywood
Cleated Craveneer
Cleated Corrugated
Watkins Type Containers
Shop and Tote Boxes
Woodsteel Nesting Boxes

★
FOR DOMESTIC OR EXPORT
FOR PEACE OR DEFENSE

**A shipping container for
every shipping purpose**

Crosley and many other leading appliance manufacturers depend upon Chicago Mill and Lumber Company to provide safe shipment for their finished products.

If you are having difficulty in solving a troublesome shipping problem, call in a Chicago Mill representative. Technical information, packing information, and testing services are available without obligation.

FOR SAFER TRANSIT BY •  TRUCK •  BOAT •  TRAIN •  PLANE

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33 South Clark Street

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Plants at: Helena, Arkansas • Greenville, Mississippi • Rockmart, Georgia
Tallulah, Louisiana • South Fork, Colorado • Chicago, Illinois

Safe Transit meeting

→ from Page ST-7

moderator for this section of the program was F. A. Petersen, Hunter-Thomas Associates, Cleveland, and chairman of the Laboratory Coordinating Division of NST. The "Board of Experts" was comprised of the following members:

Manufacturers

Edward Zelinski, Hotpoint Co.
R. M. Hindman, Crosley Div.,
Avco Mfg. Co.

J. S. Renner, Admiral Corporation

Carriers

R. E. L. Harmon, Association of
American Railroads
John M. Miller, American Truck-
ing Associations, Inc.
A. J. Orfait, Railway Express
Agency
James G. Erwin, Air Cargo, Inc.

Laboratories

W. J. Balster, Wilmer J. Balster &
Associates

Charles J. Zusi, Container Labora-
tories, Inc.

John M. Ladd, General Box Co.
B. F. Kells, Container Corporation
of America

Committee Representatives

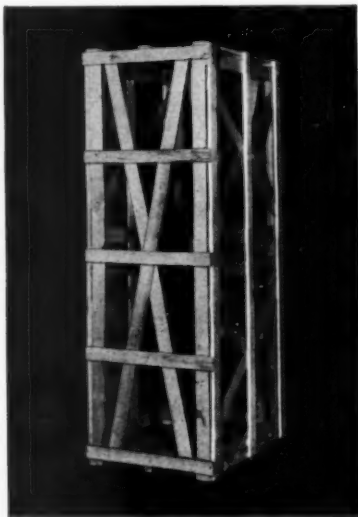
P. W. Bush, Westinghouse Electric
Corp.
M. F. Weber, Southern Express Co.
J. C. Oliver, Porcelain Enamel In-
stitute
W. B. Keefe, Westinghouse Electric
Corp.

Award to general chairman

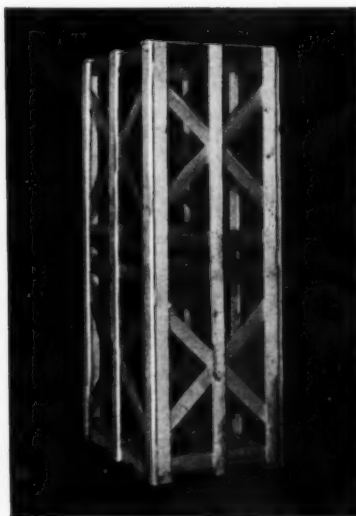
At the close of the meeting, an especially designed plaque was awarded to Ralph Bisbee by Mr. Barrows, in the name of the sponsoring agency. The award was to the General Chairman and his company, Westinghouse Electric Corporation, for the generous expenditures of time, effort and money in promoting the progress of the NST program.

In accepting the award, Mr. Bisbee said, "It is not to me that this award should be made. It should go to the 'work horses' represented by the chairmen of the various committees and all those in the NST Coordinating Group who have given so generously of their time and talents." It was this writer's impression, however, in talking with many of the members of the Safe Transit Committee that Mr. Bisbee was overly modest in his comment, for it is generally conceded that he has been the necessary "spark-plug" in the steady progress of a program which could readily have bogged down with a less interested and aggressive chairman.

WHICH CRATE IS BETTER?



CRATE A



CRATE B

The crate on the left is a pre-tested Weyerhaeuser crate. Though both crates will carry similar products, from the standpoint of economy, strength and durability, the Weyerhaeuser crate is a better buy. Here's why:

1. It uses 31.3% less material, weighs 16 pounds less, and costs 26% less!
2. It reduces assembly time, because the design automatically and accurately positions the various panels.
3. Its special lock-corner construction makes the Weyerhaeuser crate extra-strong and extra-rigid.

Leading manufacturers have depended for years on expertly-engineered Weyerhaeuser crates. Write for folder describing our crating service.

Weyerhaeuser Sales Company

Industrial Wood Parts Department

ROOM 2139 • 400 WEST MADISON, CHICAGO, ILLINOIS

ST-16

STEARNS HEADS CLARK'S NEW MIDWESTERN DIVISION

Dan Stearns, long active in Chicago in the materials handling equipment sales field, has been named manager of the newly-created mid-western region for Clark Equipment Company, with headquarters in Chicago at 310 S. Michigan Ave.

The new Clark sales region takes in Detroit, Fargo, N.D., Milwaukee, Minneapolis, Sioux Falls, S.D., South Bend, Ind., and Montreal, Toronto and Vancouver dealerships and their branches.

APRIL • 1953 finish

Packaging Exposition in Chicago, April 20-23

THE latest packaging methods and company programs will be described to more than 1,500 business men expected to attend the American Management Association's National Packaging Conference, April 20-22, at Navy Pier, Chicago. At the same time the newest in packaging equipment will be on display at the association's 22nd National Packaging Exposition, expected to draw some 25,000 persons to Navy Pier, April 20-23.

The conference program will include discussion of new production methods, merchandising trends, materials, and significant company packaging programs. The exposition will require both wings of the pier to house an expected 350 exhibitors of machinery, equipment, materials, and services. More than 120,000 square feet of exhibit space has already been reserved, placing the 1953 show 20 per cent ahead of last year's.

Among the conference speakers and their subjects are: Warren R. White, container engineer, Union Pacific Railroad, Omaha, Nebr., reduction of product damage in shipping; Carroll W. Evans, superintendent—parts and accessories division, The Studebaker Corporation, South Bend, Ind., packaging of odd-shaped parts; R. Frank Weber, general supervisor, materials handling research, International Harvester Company, Chicago, packing of fragile items; and David C. Prosser, senior methods and standards engineer, Minnesota Mining and Manufacturing Company, St. Paul, Minn., measuring material handling truck performance.

At a concurrent AMA Workshop Exhibit, first to be held in the packaging division, the Department of the Navy will show requirements of military packaging and a number of companies will display material illustrating their packaging procedures. Both exposition and conference are open to anyone with business affiliations whether or not he is a member of AMA. There is no admission charge for the exposition. Fees for confer-

ence registration are as follows: full conference, \$20; one day, \$10; and half a day, \$6.

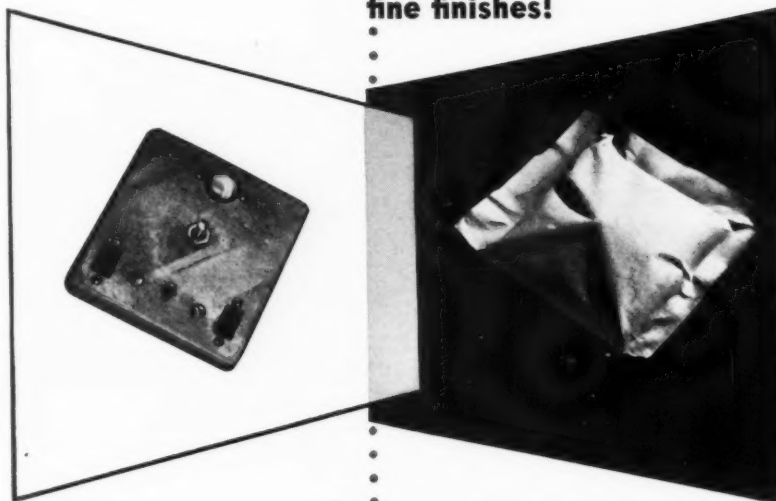
Several thousand rooms have been reserved by Chicago hotels especially for packaging show visitors. Substantial blocks have been set aside by the Conrad Hilton, Congress, Palmer House, Morrison, Chicagoan, La

Salle, Sherman, Bismark, and Sheraton, and smaller allotments have been made by other hotels. Special bus service between the hotels listed and Navy Pier has been arranged by AMA during the exposition.

The conference program was planned by AMA's Packaging Planning Council, a group of member company executives headed by John A. Warren, packaging consultant, American Home Products Company, and AMA vice president in charge of the packaging division.

New Way

to protect
fine finishes!



SHERMAN SPOT-SEAL PROTECTS FINELY FINISHED PARTS FROM SCRATCHES, DUST AND FINGERPRINTS! Goes on more quickly than any other wrap, too. That's because Spot-Seal is a specially coated wrap that sticks only to itself. Wrap it over, press it together . . . it's on!

Spot-Seal makes an economical, dust-proof, water-repellent, tamper-proof wrap for highly finished surfaces needing protection from abrasion, scratches or fingerprints. Because Spot-Seal sticks only to itself, it will not mar finishes, requires no fastenings. It's a quick, easy way to provide protection. Switch to labor-saving Spot-Seal for quick, convenient, protective packaging of finished parts. Write for free samples today, Dept. O. See for yourself the protection and quick-wrapping Spot-Seal gives.

Sherman PAPER PRODUCTS CORPORATION
NEWTON UPPER FALLS, MASS.
CHICAGO LOS ANGELES NEW YORK

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Speed charging forks, burning bars, spray booths and guns, compressors, pebble mills, pyrometers, graining table and plates, Sly sand blast room, etc.

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360 N. Michigan Ave., Chicago 1, Ill.

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360 N. Michigan Ave., Chicago 1, Ill.

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ROTOCLONE: Used but in top condition. #5 Type N, Class 500. Serial No. 19399 ARR "B" CFM @ 6½" T.P. Access door standard—location control box. Made by American Air Filter Co., Inc. Cost \$1250.00 new. For details and price write:

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